

THE JOURNAL OF MEDICAL EDUCATION

OFFICIAL PUBLICATION OF
THE ASSOCIATION OF AMERICAN MEDICAL COLLEGES



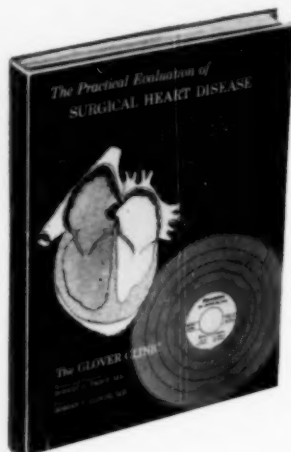
JUNE 1959 • VOLUME 34 • NUMBER 6

- 555 **Medical Education and American Specialty Boards**
John McK. Mitchell
- 561 **Daniel Drake (1785-1852), Persevering Idealist**
Chauncey D. Leake
- 571 **Conformance, Originality, and Responsibility in Higher Education**
Jurgen Ruesch
- 581 **Education of the Physician for His Role in Comprehensive Health Service**
John L. Caughey, Jr.
- 585 **The First Teaching Institute of The University of Michigan Medical School, June 6, 7, 1958**
Dorin L. Hinerman, H. Waldo Bird, and John M. Weller
- 589 **The Critical Response to *Gray's Anatomy* (A Centennial Comment)**
Fred Erisman
- 592 **A Course in Pathology To Promote Interest in the Specialty**
Alfred A. Angrist
- 597 **An Experimental Approach to the Teaching of Human Ecology**
Leon R. Lezer
- 601 **Collegiate Training of Doctors of Medicine**
John R. Sampey
- 603 **Medical Education Forum—Editorial • Reports**
- 612 **Abstracts from the World of Medical Education**
- 621 **New Books**
- xviii **News in Brief**

A NEW BOOK!

Hall—The **FUNCTION of the ENDOCRINE GLANDS**

See Saunders advertisement just inside ➞



Just Published...

THE PRACTICAL EVALUATION OF SURGICAL HEART DISEASE

The Glover Clinic. Written & Compiled by Robert G. Trout, M.D.
Edited by Robert P. Glover, M.D.

This book is a practical, straightforward presentation of the diagnostic characteristics of various cardiac conditions which may be considered for surgical treatment. It will be a great aid to the student in evaluating obvious cardiac problems. *The inclusion of*

a 45 r.p.m. record of diagnostic heart murmurs represents a new approach which should prove most valuable.

This volume is a simplification of the subject, relying purely on fundamentals which have proven themselves by extensive clinical application, to more adequately serve its intended purpose as a guide and general reference.

144 pp., 8½×11, illus., \$10.00

Survey of Clinical Pediatrics 3rd Edition

By Lawrence B. Slobody, M.D.

The growth and changing practices of pediatrics have necessitated this early revision, and every phase of the book has been extensively revised and brought up to date. All the material presented has been used with the student in actual work at the bedside and in conference. As in previous editions, the author emphasizes strongly that the physical, mental, emotional, and social aspects of the child are indivisible and require consideration. New material has been

added on nutritional requirements, immunization schedules, abnormal hemoglobins, and psychosocial development. A complete change in the approach to congenital heart disease has been incorporated in the chapter on heart disease. New clinical entities have been added, e.g. ECHO and adenovirus diseases. The review questions have been completely revised, with more use of the objective type.

530 pp., 6×9, illus., \$11.00

The Blakiston Division

330 West 42nd Street

New York 36, N.Y.



Just Published!

New and Revised Textbooks for Medical Classrooms

*A
New
Book!*

Hall—The FUNCTION of the ENDOCRINE GLANDS

Here is a new book to help medical students with the difficult subject of endocrine physiology. Its simple and unadorned style of writing makes it a remarkably clear and effective presentation of the normal functioning of the human endocrine system. Dr. Hall illuminates the "whys" and "hows" behind normal glandular activity so that pathologic con-

ditions can more readily be understood when they are encountered. Functions of the various glands are taken up and described in turn—the adrenals, thyroid, testes, ovaries, pancreas, parathyroids, etc. In addition the author discusses endocrine factors in growth, maturation and decline. A chapter is devoted to steroid metabolism.

By PETER F. HALL, M.D., Lecturer in Physiology, University of Sydney, Australia. About 300 pages, illustrated. About \$5.75. *New—Just Ready!*

*New
(10th)
Edition!*

Cecil & Loeb—TEXTBOOK of MEDICINE

164 authorities have expended every effort in this *New (10th) Edition* to bring you today's collective knowledge on pathophysiology, diagnosis and management of disease. From etiology to follow-up care the information is all in logical order under the individual disease being discussed. This revision is the most extensive the text has ever undergone. Some of

the important features in this *New (10th) Edition* include: 38 completely new topics—Adenoviral Infections—ECHO Viral Infections—High Altitude Sickness—Renal Glycosuria, etc. 91 articles drastically revised—Headache—Myasthenia Gravis—Acute Chorea—Benign Intracranial Hypertension, etc. 30 new contributors.

By 164 AMERICAN AUTHORITIES. Edited by RUSSELL L. CECIL, M.D., Sc.D., Professor of Clinical Medicine Emeritus, Cornell University; and ROBERT F. LOEB, M.D., Sc.D., D. Hon. Causa., L.L.D., Bard Professor of Medicine, Columbia University; with the assistance of Associate Editors ALEXANDER B. GUTMAN, M.D., Ph.D.; WALSH McDERMOTT, M.D.; and HAROLD G. WOLFF, M.D., 1665 pages, 7" x 10", with 171 illustrations. In single volume form about \$16.50. In two volume form about \$20.50. *New (10th) Edition—Just Ready!*

*A
New
Book!*

Hilleboe & Larimore—PREVENTIVE MEDICINE

This modern presentation shows the student how to incorporate preventive medicine as an integral part of his future daily practice. Material has been contributed by experts whose training and experience cover a broad spectrum of medical service, teaching and research. From them the student will learn how to control environmental factors in the occurrence of

disease, how to eliminate pre-disease conditions and various prophylactic measures against disease. There are helpful discussions on such subjects as: how to control the progression of disease; health inventories; follow-up screening and diagnostic examinations; preventive aspects of alcoholism.

Edited by HERMAN E. HILLEBOE, M.D., Commissioner of Health, State of New York, Department of Health, Albany; and GRANVILLE W. LARIMORE, M.D., Deputy Commissioner of Health, State of New York, Department of Health, Albany. About 626 pages, 6 1/2" x 9 1/4", illustrated. About \$12.50. *New—Just Ready!*

*Gladly Sent to Teachers
for Consideration as Texts*

W. B. SAUNDERS COMPANY
West Washington Square Philadelphia 5

THE JOURNAL OF MEDICAL EDUCATION

Official Publication of the Association of American Medical Colleges

EDITORIAL OFFICE

University Hospitals, School of Medicine, University of Wisconsin, Madison 6, Wisconsin, ALpine 6-6811

JOHN Z. BOWERS, *Editor-in-Chief*

ELIZABETH B. POHLE, *Assistant Editor*

OFFICE OF THE ASSOCIATION OF AMERICAN MEDICAL COLLEGES

2530 Ridge Avenue, Evanston, Illinois, DAVIS 8-9505

TOM COLEMAN, *News Editor*

NEVA V. RESEK, KAY McDONOUGH, *Assistants*

MARY E. PARRILLI, *Advertising*

EDITORIAL BOARD

JOHN Z. BOWERS, *Chairman*

JULIUS H. COMROE, JR.

T. HALE HAM

GEORGE HARRELL

VERNON W. LIPPAARD

WILLIAM F. NORWOOD

KENNETH E. PENROD

STANLEY E. BRADLEY

MELVIN CASBERG

JOHN A. D. COOPER

INFORMATION FOR SUBSCRIBERS

The Journal of Medical Education is owned by the Association of American Medical Colleges and published monthly by the University of Chicago Press, 5750 Ellis Avenue, Chicago 37, Illinois. Second-class postage paid at Chicago, Illinois.

Subscription Rates: \$7.00 per year, \$13.50 two years, \$19.50 three years, \$1.00 per single copy; foreign, \$8.00 per year, \$15.50 two years, \$22.50 three years, \$1.25 per single copy; Pan America and Canada, \$7.50 per year, \$14.50 two years, \$21.00 three years. Supplements, \$2.00.

Copyright June 1959 by the Association of American Medical Colleges.

INFORMATION FOR CONTRIBUTORS

The Journal of Medical Education serves as an international medium for the exchange of ideas in medical education, as well as a means of communicating the policies, programs, and problems of the Association. The Editorial Board welcomes the submission of manuscripts concerned with the broad field of medical education; this includes preparation for medical education; the medical school experience; intern and resident education; graduate and postgraduate medical education. The Editorial Board recognizes that medical education includes the activities of faculty, students, administrators, and those of the practicing profession who also teach and learn. Thus, it invites communications from any of these sources.

Manuscripts should be submitted in duplicate. All manuscripts are reviewed by the Editorial Board before acceptance for publication. All copy, including footnotes, tables, and legends, should be typed double-spaced. Each diagram or graph or photograph should have a brief legend. Each table should be typed on a separate sheet of paper. References should refer to published material only, must be submitted in alphabetical order, and should include, in order: author, title, journal abbreviation (*Quarterly Cumulative Index Medicus* form), volume number, page, and year; book references should also include editors, edition, publisher, and place of publication.

Galley proofs will be mailed to authors for correction before publication and should be returned within 48 hours after receipt.

Reprints may be ordered, when galley proofs are returned, from the University of Chicago Press, in multiples of 50, at a price depending on the length of the article; prices are listed on the reprint order form.

Medical Education Forum includes editorials, letters, comments, criticisms, and excerpts from important addresses.

News from the Medical Schools: Material for this section should be transmitted to the News Editor, Mr. Tom Coleman, 2530 Ridge Avenue, Evanston, Illinois. Announcements of major faculty and administrative appointments, news of distinguished visitors and significant educational developments will be included. It is not possible to publish notices on grants-in-aid for scientific research.

Items of Current Interest: Audio-visual news and notices from national and federal agencies appear in this section.

CORRESPONDENCE

Address all correspondence regarding manuscripts, editorials, and letters to the Editor to the Editorial Office, University Hospitals, University of Wisconsin, Madison 6, Wisconsin.

Address all correspondence concerning subscriptions, reprints, changes of address, and back numbers to the University of Chicago Press, 5750 Ellis Avenue, Chicago 37, Illinois. All changes of address should provide both the old and the new address.

Address all correspondence concerning news, announcements, and personnel exchange to the office of the Association of American Medical Colleges, c/o Mr. Tom Coleman, 2530 Ridge Avenue, Evanston, Illinois; address all correspondence concerning advertising to Mrs. Mary E. Parrilli, 2530 Ridge Avenue, Evanston, Illinois.

PRINTED IN U.S.A.

<p>HOPPS'</p> <p>PRINCIPLES OF PATHOLOGY</p> <p>(New Book—Apr. 1959)</p>	<p>By Howard C. Hopps, M.D. University of Texas School of Medicine</p> <p>The purpose of this text is to establish for the student a basic concept of disease and a broad understanding of how disease becomes established, how and why it produces its effects. The presentation of principles establishes a firm foundation for later assimilation of specific facts. More than 600 illustrations are immediately adjacent to pertinent text matter on an 8" × 10" page and an appendix gives additional tabular data useful to the student.</p> <p>330 Pages • 613 Illus. • May 1959 • \$6.95</p>
<p>COLE & ELMAN'S</p> <p>TEXTBOOK OF SURGERY</p> <p>(7th Ed.—May 1959)</p>	<p>By Warren H. Cole, M.D., F.A.C.S. Wayne Univ. School of Medicine</p> <p>A new double-column page format with complete rewriting and revision distinguish the new 7th edition of this standard American text. 32 new contributing authors have joined 14 previous authors to cover the present status of general surgery—pathophysiology, clinical manifestations and operating principles with much detailed surgical treatment and technic. The cardiovascular material is outstanding.</p> <p>7th (1959) Edition • 1200 Pages • 1000 Illus. \$17.00</p>
<p>READINGS IN PSYCHOANALYTIC PSYCHOLOGY</p> <p>(New Book—March 1959)</p>	<p>By Morton Levitt, Ph.D. With 46 Contributing Authors</p> <p>Provides reliable source material for all interested in the health and behavioral sciences. Both theoretical and practical aspects of the subject contribute to an understanding of purposes and practices in the field. The readings are drawn from 23 of the most authoritative sources and include the writings of such individuals as Sterba, Fliess, Katan, Buxbaum, Loewenstein and Glover. Stimulating and absorbing.</p> <p>438 Pages • March 1959 • \$8.50</p>
<p>BASIC CLINICAL PARASITOLOGY</p> <p>(New Book—Sept. 1958)</p>	<p>By David L. Belding, M.D.</p> <p>This new title is a practical condensation of the author's definitive TEXTBOOK OF CLINICAL PARASITOLOGY. Following introductory chapters on general parasitology, the author covers the protozoa in 3 chapters, nemathelminthes in 3 chapters, cestoidea in 3 chapters, the trematoda in 3 chapters and arthropoda in 4 chapters. A concluding section covers technical methods of diagnosis of parasitic diseases and methods of treatment.</p> <p>544 Pages • Illus. • \$9.00</p>
<p>FOLEY & WRIGHT'S</p> <p>COLOR ATLAS OF VASCULAR DISEASES</p> <p>(New Book—Aug. 1959)</p>	<p>By William T. Foley, M.D. and Irving S. Wright, M.D. Vascular Disease Clinic, New York Hospital</p> <p>194 illustrations, mostly four-color enlargements of transparencies, illustrate 94 cases of vascular disease. Text includes brief case histories, discussion of type of case and explanations of the authors' points of view on diagnosis, pathogenesis and conservative treatment. These selected cases cover arterial and venous diseases; lymphedema; vasospasm; aneurism; minute vessel diseases; and blood vessel tumors. Index and references included.</p> <p>225 Pages • 194 Illus. Aug. 1959 • (T)\$15.00</p>
<p>For Sale at all Bookstores or APPLETON-CENTURY-CROFTS, INC., 35 W. 32nd St., N.Y. 1, N.Y.</p>	



while she is planning
her family,

she needs your help
more than ever



the most widely prescribed contraceptive



WHENEVER A DIAPHRAGM IS INDICATED

3

Popular Mosby Texts You'll Want to Recommend to Your Students

**5th
Edition**

Shands HANDBOOK OF ORTHOPAEDIC SURGERY

Interprets the Fundamentals of Diagnosis and Treatment

No other text you could recommend to your students interprets the fundamentals of diagnosis and treatment to the medical student with such clarity and conciseness as this popular handbook. A compact, inexpensive guide to all problems of orthopaedic surgery—in both the child and adult—this 5th edition comprehensively covers injuries, diseases and deformities of the bones and joints and their related structures; the muscles, tendons, ligaments and nerves. Emphasis is placed not only on the prevention and correction of deformities, but also on improving and preserving the function of the bones and joints and motor apparatus when function is impaired. You'll find particular attention has been given to the regrouping of the General Affections of the Skeleton for a clearer presentation and photographic illustrations have replaced almost all of the line drawings in this 5th edition.

By ALFRED R. SHANDS, JR., B.A., M.D., Medical Director of the Alfred I. du Pont Institute of the Nemours Foundation, Wilmington, Delaware. In collaboration with RICHARD B. RANEY, B.A., M.D., Professor of Surgery in Orthopaedic Surgery, University of North Carolina, Chapel Hill, N.C. 1957, 5th edition, 725 pages, 5¼" × 8½", 214 illustrations. Price, \$9.75.

Bing's LOCAL DIAGNOSIS IN NEUROLOGICAL DISEASES

Translated, Revised and Enlarged from the 14th German Edition

Universally known and accepted, this enlarged translation and revision of the Fourteenth German edition provides students with basic functional anatomy on which diagnosis of diseases and other disorders of the central nervous system rest, together with a correlation of the anatomy with signs and symptoms and syndromes. A happy blending of the clinical acumen of Bing and the anatomical tradition of Haymaker, this revision is terse, didactic and authoritative in presentation and abundant with excellent new and redrawn illustrations. You will find eight new chapters have been added in this revision. Other valuable additions include an atlas of the cross section of the brain and an extensively enlarged bibliography.

By WEBB HAYMAKER, M.D., Chief, Neuropathology Section, Armed Forces Institute of Pathology, Associate Professor of Neurology, Georgetown University School of Medicine. With chapters by Richard G. Berry, Bernard S. Epstein and Paul I. Yakovlev. 1956, 478 pages, 6¾" × 9¾", 225 illustrations, 9 in color. Price, \$16.75.

Ulett-Goodrich A SYNOPSIS OF CONTEMPORARY PSYCHIATRY

Convenient Pocket Size Makes it Handy for Quick Reference

Unlike other books on psychiatry which stress the biological or psychoanalytic approach, this book helps students integrate their knowledge of the "basic sciences of psychiatry"—medicine, neurology, psychology, social science and psychoanalysis and shows them how to put this knowledge to practical use. You'll find the book covers history-taking, complete psychiatric, neurological and psychological examinations, diagnostic syndromes and brief descriptions of therapies in a simple, outline form. Completely up-to-date, it uses a nomenclature consistent with that of the American Psychiatric Association.

By GEORGE A. ULETT, B.A., M.S., Ph.D., M.D., Professor of Psychiatry, Department of Psychiatry and Neurology, Washington University School of Medicine; and D. WELLS GOODRICH, M.D., Chief, Section on Research Planning and Design, Laboratory of Child Research, National Institute of Mental Health, The Clinical Center, Bethesda, Maryland. 1956, 243 pages, 4¾" × 7¾". Price, \$5.25.

**C
V**



The C. V. MOSBY Company

3207 Washington Boulevard, St. Louis 3, Missouri

Calendar of Meetings

ASSOCIATION OF AMERICAN

MEDICAL COLLEGES

70th Annual Meeting, November 2-4

Edgewater Beach Hotel, Chicago, Ill.

World Conference on Medical Education, Palmer House, Chicago, Ill., U.S.A., Aug. 30-Sept. 4. For information address: Dr. Louis H. Bauer, 10 Columbus Circle, New York 19, N.Y., U.S.A.

JUNE

AMERICAN NEUROLOGICAL ASSOCIATION, Claridge Hotel, Atlantic City, N.J., June 15-17. Dr. Charles Rupp, 133 S. 36th St., Philadelphia 4, Secretary.

AMERICAN ORTHOPEDIC ASSOCIATION, Lake Placid Club, Lake Placid, N.Y., June 16-18. Dr. Lee Ramsey Straub, 535 E. 70th St., New York 21, Secretary.

AMERICAN PROCTOLOGIC SOCIETY, Shelburne Hotel, Atlantic City, N.J., June 15-18. Dr. Norman D. Nigro, 10 Peterboro St., Detroit 1, Secretary.

MEDICAL LIBRARY ASSOCIATION, King Edward-Sheraton Hotel, Toronto, Can., June 15-19. Miss Nettie A. Mehne, The Upjohn Co., Kalamazoo, Mich., Secretary.

SOCIETY OF NUCLEAR MEDICINE, Palmer House, Chicago, June 18-20. Dr. Morris T. Friedell, 104 S. Michigan Ave., Chicago 3, Chairman, Press & Public Relations Committee.

JULY

AMERICAN SOCIETY OF FACIAL PLASTIC SURGERY, New York City, July 17. Dr. Samuel M. Bloom, 123 E. 83rd St., New York 28, Secretary.

AUGUST

AMERICAN CONGRESS OF PHYSICAL MEDICINE AND REHABILITATION, Hotel Leamington, Minneapolis, Aug. 30-Sept. 4. Miss Dorothea C. Augustin, 30 N. Michigan Ave., Chicago 2, Executive Secretary.

AMERICAN HOSPITAL ASSOCIATION, Statler Hotel, New York City, Aug. 24-27. Dr. Edwin L. Crosby, 18 E. Division St., Chicago, Director and Secretary.

NATIONAL MEDICAL ASSOCIATION, Detroit, Aug. 10-13. Dr. John T. Givens, 1108 Church St., Norfolk, Va., Secretary.

SEPTEMBER

AMERICAN ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS, The Homestead, Hot Springs, Va., Sept. 10-12. Dr. E. Stewart Taylor, 4200 E. Ninth Ave., Denver 20, Secretary.

AMERICAN ASSOCIATION FOR THE SURGERY OF TRAUMA, Mount Washington Hotel, Bretton Woods, N.H., Sept. 24-26. Dr. William T. Fitts, Jr., 3400 Spruce St., Philadelphia 4, Secretary.

AMERICAN COLLEGE OF GASTROENTEROLOGY, Biltmore Hotel, Los Angeles, Sept. 19-26. Mr. Daniel Weiss, 33 W. 60th St., New York 23, N.Y., Executive Director.

AMERICAN COLLEGE OF SURGEONS, The Traymore Hotel, Atlantic City, N.J., Sept. 28-Oct. 2. Dr. Paul K. Hawley, 40 E. Erie St., Chicago 11, Director.

AMERICAN ROENTGEN RAY SOCIETY, The Netherland Hilton Hotel, Cincinnati, September 22-25. Dr. C. Allen Good, Mayo Clinic, Rochester, Minn., Secretary.

AMERICAN SOCIETY OF CLINICAL PATHOLOGISTS, The Palmer House, Chicago, Sept. 7-11. Mr. Claude E. Wells, 2052 N. Orleans, Chicago 14, Executive Secretary.

CENTRAL ASSOCIATION OF OBSTETRICIANS AND GYNECOLOGISTS, Drake Hotel, Chicago, Sept. 24-26. Dr. Edwin J. DeCosta, 104 S. Michigan Ave., Chicago 3, Secretary.

COLLEGE OF AMERICAN PATHOLOGISTS, The Palmer House, Chicago, Sept. 6. Dr. Arthur H. Dearing, Suite 2115, Prudential Plaza, Chicago 1, Executive Director.

MEDICAL PROGRESS ASSEMBLY, Tutwiler Hotel, Birmingham, Ala., Sept. 13-15. Dr. Herbert H. Thomas, 920 S. 19th St., Birmingham, Ala., Chairman, Publicity Committee.

MID-CONTINENT PSYCHIATRIC ASSOCIATION, Holiday Inn Motor Hotel, St. Louis County, Mo., Sept. 18-20. Dr. W. Payton Kolb, Baptist Medical Arts Bldg., Little Rock, Ark., Secretary.

NORTH AMERICAN FEDERATION, INTERNATIONAL COLLEGE OF SURGEONS, Chicago, Sept. 13-17. For information write the Secretariat, 1516 Lake Shore Dr., Chicago 10.

UNITED STATES SECTION, INTERNATIONAL COLLEGE OF SURGEONS, Palmer House, Chicago, Sept. 13-17. Dr. Ross T. McIntyre, 1516 Lake Shore Dr., Chicago 10, Executive Secretary.

WORLD MEDICAL ASSOCIATION, Montreal, Canada, Sept. 7-12. Dr. Louis H. Bauer, 10 Columbus Circle, New York 19, Secretary-General.

Coming Early This Summer!

In Celebration of the 100th ANNIVERSARY of

GRAY'S ANATOMY

Lea & Febiger is proud to present the fully up to date

AMERICAN CENTENNIAL EDITION

1859-1959

Anatomy of the Human Body. By HENRY GRAY, F.R.S.
Edited by CHARLES MAYO GOSS, M.D., Managing Editor
of *Anatomical Record*; Professor and Head of the Department
of Anatomy, Louisiana State University, New Orleans. *About*
1500 pages, 7" \times 10". *More than 1200 illustrations, mostly in*
color. New 27th (American Centennial) edition. Ready soon.

**The Ideal Review Book for the
September 9-10 National Board Examinations!**

JOHNSTON—A SYNOPSIS OF REGIONAL ANATOMY

A Synopsis of Regional Anatomy. By T. B.
JOHNSTON, C.B.E., M.D., Emeritus Professor of
Anatomy, University of London, Guy's Hospital
Medical School. 450 pages, 5¼" \times 7¼". 20 plates
and 19 text figures. 8th edition. \$6.00.

Dr. Johnston's book offers a thorough review of anatomy for those
who have already studied the subject with the aid of a standard
text and have had dissecting room experience. "Of particular value
to medical students."—*Medical Education*.

Washington
Square

LEA & FEBIGER

Philadelphia 6
Pennsylvania

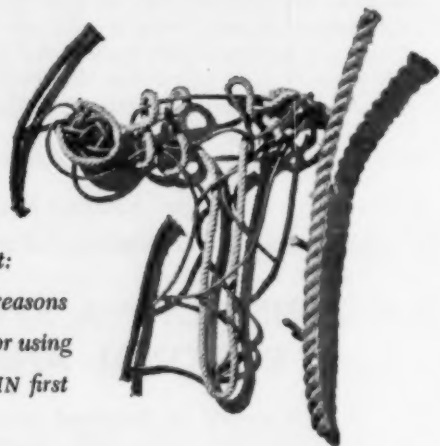
pyelonephritis

"the most important concept is that it is a tubular disease"¹

FURADANTIN[®]

brand of nitrofurantoin

a most important characteristic: effective at the tubular level



in each patient:

2 million reasons

for using

FURADANTIN first

In addition to simple glomerular filtration, FURADANTIN is actively excreted by the cells of the tubules. A significant and singular characteristic of FURADANTIN, it is but one reason why "the protracted administration of nitrofurantoin [FURADANTIN] to patients with in-eradicable urinary tract infection, particularly chronic pyelonephritis without demonstrable obstruction, may usefully complement the medical management of this difficult problem."²

Available as Tablets, 50 and 100 mg.; Oral Suspension, 25 mg. per 5 cc. tsp.

References: 1. Smith, I. M., and Lenyo, L.: Am. Practitioner 9:78, 1958. 2. Jawetz, E., et al.: A.M.A. Arch. Int. M. 100:549, 1957.

NITROFURANS—a unique class of antimicrobials—neither antibiotics nor sulfonamides 

EATON LABORATORIES, NORWICH, NEW YORK

Two new freedoms for the modern woman

"The menstrual function should entail no worthwhile discomfort and no interference with the normal activities."¹ "The chief virtue of the tampon is that it gives complete freedom."²

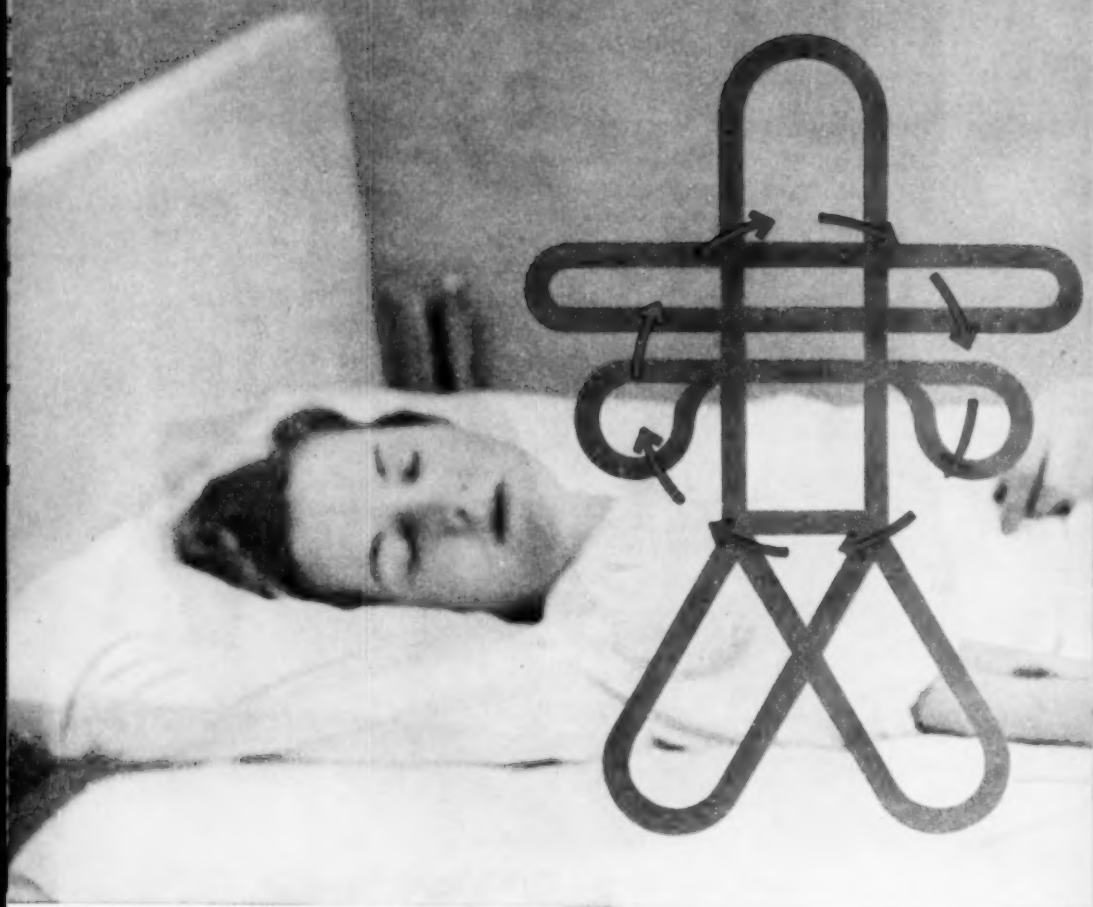
Freedom of action. "Tampons have the advantage of being wholly internal and much more comfortable than wearing a pad or a napkin."³ And Tampax can cause no perineal irritation or chafing — even for the most active woman.

Freedom from fear. Absorptive powers of Tampax® have proved so effective "that women whose menstrual periods were normal could wear (Tampax) during the entire period."⁴ Knowing the Tampax 22-year clinical record for safety, the profession recommends it widely, to free women from the physical and psychological hazards of "those days," from menarche to menopause.



TAMPAX The world's leading internal menstrual guard.
3 absorbencies to meet varying needs: Regular, Super, Junior.

Tampax Incorporated, Palmer, Mass. 1. Novak, E., and Novak, E. R.: "Textbook of Gynecology," 1952. 2. Bernstein, J. B., and Rakoff, A. E.: "Vaginal Infections, Infestations and Discharges," 1953. 3. Janney, J. C.: "Medical Gynecology," 1950. 4. Karnaky, R. J.: "Clin. Med." 3:545, 1956.




DISSOLUTION OF CLOTS WITH

ACTASE

TRADEMARK

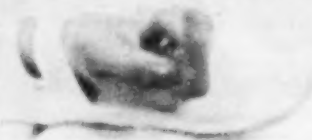
Fibrinolysin (Human)



THE OPENING OF A NEW EPOCH

in the treatment of
thromboembolic disorders:

THROMBOPHLEBITIS
PULMONARY EMBOLISM



*With ACTASE it is now possible to enhance plasma fibrinolytic activity. ACTASE is prepared from human plasma. It contains the active and purified form of the proteolytic enzyme fibrinolysin. "The clinical results after fibrinolysin infusion...have been consistently encouraging in terms of its apparent ability to dissolve a recently acquired intravascular clot."*¹

CLINICAL DATA



SPECIFIC THERAPY - lysis of the clot
thrombophlebitis • pulmonary embolism

ACTASE

TRADEMARK

Fibrinolysin (Human)



A NEW THERAPEUTIC AGENT

ACTASE "...may prove a safe and effective agent for achieving acute lysis of intravascular clot."¹ In thrombophlebitis the benefits "...range from significant improvement to complete rapid relief, if adequate doses are administered."²

"Pulmonary emboli, although notoriously difficult to evaluate clinically, respond well to plasmin [fibrinolysin]."³

ACTASE overcomes the disadvantages of earlier thrombolytic agents, which proved to be ineffective for intravenous use, or unsafe because of severe side reactions and lack of specificity.

Studies show that ACTASE, while maintaining

fibrinolytic activity, has no clinically significant effect on blood coagulation. "Anticoagulant drugs can be safely used simultaneously."¹

SAFETY IN CLINICAL USE

The only reaction observed with intravascular use of fibrinolysin has been a temperature rise in some patients. In one series³ of 141 patients, there was no febrile response in 35 per cent, a mild temperature rise in 42 per cent, and a severe febrile reaction in 23 per cent. Chilliness, nausea, vomiting, dizziness, headache and muscle pain may occur. The prophylactic administration of antipyretics^{1,4} and antihistamines,¹ or sedatives, may lessen and possibly prevent the febrile reaction.

CLINICAL RESULTS WITH FIBRINOLYSIN THERAPY

Source	Indication	Number of Patients	Results
Moser ¹	Pulmonary embolism	8	4 patients showed beneficial effects
Cliffton ³	Thrombophlebitis and pulmonary emboli	4	3 patients experienced complete relief
ORTHO ³	Pulmonary embolism	36	70% excellent; 24% questionable; 6% poor
Moser ¹	Deep venous thrombophlebitis	18	"consistently encouraging"
Cliffton ³	Venous thromboses	17	excellent response in 9 of 11 patients who received adequate dosage
Cliffton ³	Peripheral venous thrombosis	12	improvement in all patients, ranging from subsidence to unequivocal lysis of the thrombus
Moser ¹	Superficial thrombophlebitis	7	evidence of thrombolysis in 4 patients
ORTHO ³	Thrombophlebitis	171	65% excellent; 26% good; 9% poor

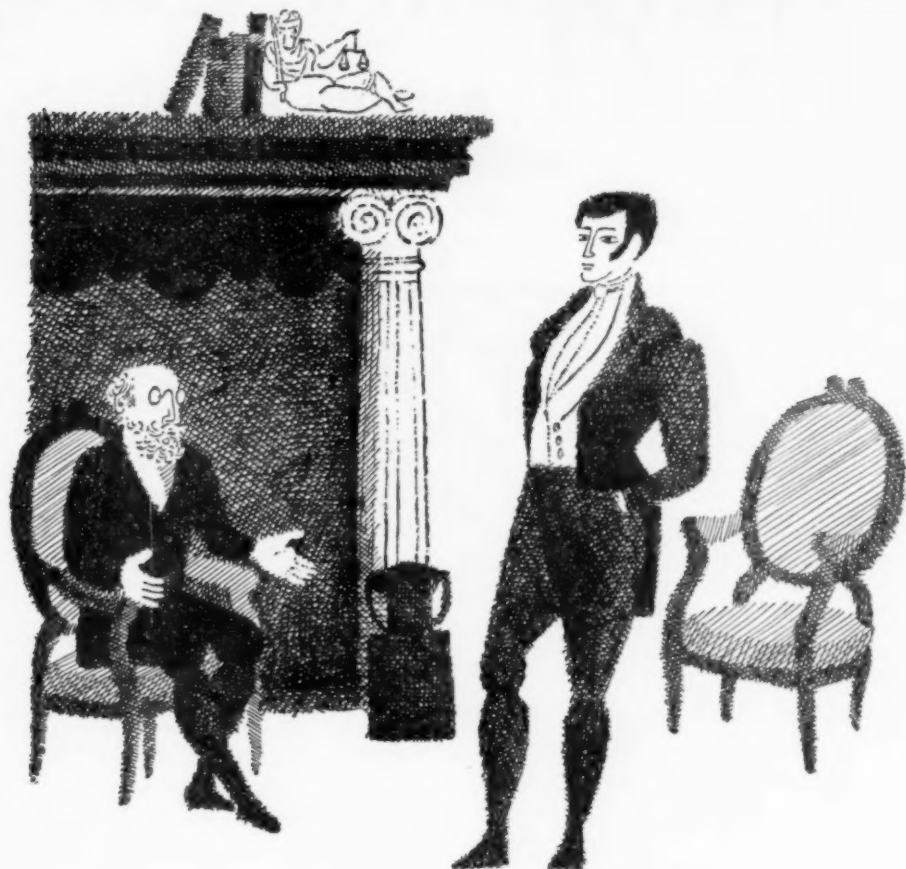
ACTASE is given as an intravenous infusion over a period of two hours. Complete literature is available on request.

Packaging: ACTASE is supplied in vials containing 50,000 Fibrinolytic Units.

References: (1) Moser, K. M.: J.A.M.A. 167:1695 (Aug. 3) 1958. (2) Cliffton, E. E.: J. Am. Geriatrics Soc. 6:118, 1958. (3) Clinical Research Division, Ortho Pharmaceutical Corporation. (4) Ambrus, J. L., and others: Ann. New York Acad. Sc. 68:97 (Aug. 30) 1957. (5) Cliffton, E. E.: Ann. New York Acad. Sc. 68:209 (Aug. 30) 1957.

ORTHO PHARMACEUTICAL CORPORATION • RARITAN, NEW JERSEY





Pater filiusque

"I said: 'Father, I know that I have been a great disappointment to you. I knew from the outset that you wanted me to become a lawyer. It is impossible for me to be a lawyer.... But if I must study a profession, there is nothing left for me to do but to study medicine.'

"He replied: 'Well, I suppose that I can not control you; but it is a profession for which

I have the utmost contempt. There is no science in it. There is no honor to be achieved in it; no reputation to be made, and to think that *my* son should be going around from house to house through this country, with a box of pills in one hand and a squirt in the other, to ameliorate human suffering, is a thought I never supposed I should have to contemplate.'"

—DR. J. MARION SIMS (*The Story of My Life*, 1888)



One of a series presented by

BURROUGHS WELLCOME & CO. (U.S.A.) INC., TUCKAHOE, N. Y.

NEW!

BAUSCH & LOMB STEREOMICROSCOPES

FEATURING

STEREO

ZOOM

CONTINUOUSLY
VARIABLE POWER



Here's a completely new optical concept for faster, easier 3D work. Just turn the magnification knob and watch the crisp stereo image zoom to the *exact* size you need. Not just a few fixed powers, but *any* power within the wide range! Exclusive with Bausch & Lomb.

Featuring Exclusive POWER POD Design Concept

- Sealed to keep dust out of optical system!
- No nosepiece!
- No individual objectives... no objectives to change!
- No image jump!
- No image blackout!



Featuring NEW LOW PRICE

... about one-third lower than previous line!

MAIL COUPON TODAY!

BAUSCH & LOMB OPTICAL CO.
14742 St. Paul Street, Rochester 2, N. Y.

- ☐ Send me new Catalog D-15.
☐ Schedule a demonstration at my convenience.
☐ I'd like to borrow a B&L Stereomicroscope for 15-day trial without cost or obligation.

Name, Title.....
Company.....
Address.....
City..... Zone..... State.....

BAUSCH & LOMB



America's only complete optical source
... from glass to finished product

The Journal of MEDICAL EDUCATION

VOLUME 34 • NUMBER 6 • JUNE, 1959

Table of Contents

- vi Calendar of Meetings
- 555 Medical Education and American Specialty Boards—John McK. Mitchell
- 561 Daniel Drake (1785-1852), Persevering Idealist—Chauncey D. Leake
- 571 Conformance, Originality, and Responsibility in Higher Education—Jurgen Ruesch
- 581 Education of the Physician for His Role in Comprehensive Health Service—John L. Caughey, Jr.
- 585 The First Teaching Institute of The University of Michigan Medical School, June 6, 7, 1958—Dorin L. Hinerman, H. Waldo Bird, and John M. Weller
- 589 The Critical Response to *Gray's Anatomy* (A Centennial Comment)—Fred Erisman
- 592 A Course in Pathology To Promote Interest in the Specialty—Alfred A. Angrist
- 597 An Experimental Approach to the Teaching of Human Ecology—Leon R. Lezer
- 601 Collegiate Training of Doctors of Medicine—John R. Sampey
- 603 Medical Education Forum
- 603 Editorial: Medical Education, an Ambassador of International Good Will—Melvin A. Casberg
- 605 Reports:
 - A Course in Problems of Medical Practice—Thomas J. Brooks, Jr., and Louis F. Rittelmeyer, Jr.
 - A Statement of the Objectives of the Association of American Medical Colleges
 - The Need for Physicians
- 612 Abstracts from the World of Medical Education
- 621 New Books—Abstracts, Books Received
- xviii News in Brief
- xviii News from the Medical Schools
- xxviii Items of Current Interest
- xxxii Personnel Exchange
- xxxiv Index to Advertisers

Officers of the Association of American Medical Colleges, 1958-1959

PRESIDENT: John McK. Mitchell, *University of Pennsylvania*

PRESIDENT-ELECT: Thomas H. Hunter, *University of Virginia*

PAST-PRESIDENT: Lowell T. Coggeshall, *University of Chicago*

VICE PRESIDENT: Walter R. Berryhill, *University of North Carolina*

TREASURER: J. Murray Kinsman, *University of Louisville*

EXECUTIVE COUNCIL:

Gordon H. Scott, *Wayne State University*

Mark R. Everett, *University of Oklahoma*

John E. Deitrick, *Cornell University*

John F. Sheehan, *Stritch School of Medicine of Loyola University*

Stanley W. Olson, *Baylor University*

George Wolf, Jr., *University of Vermont*

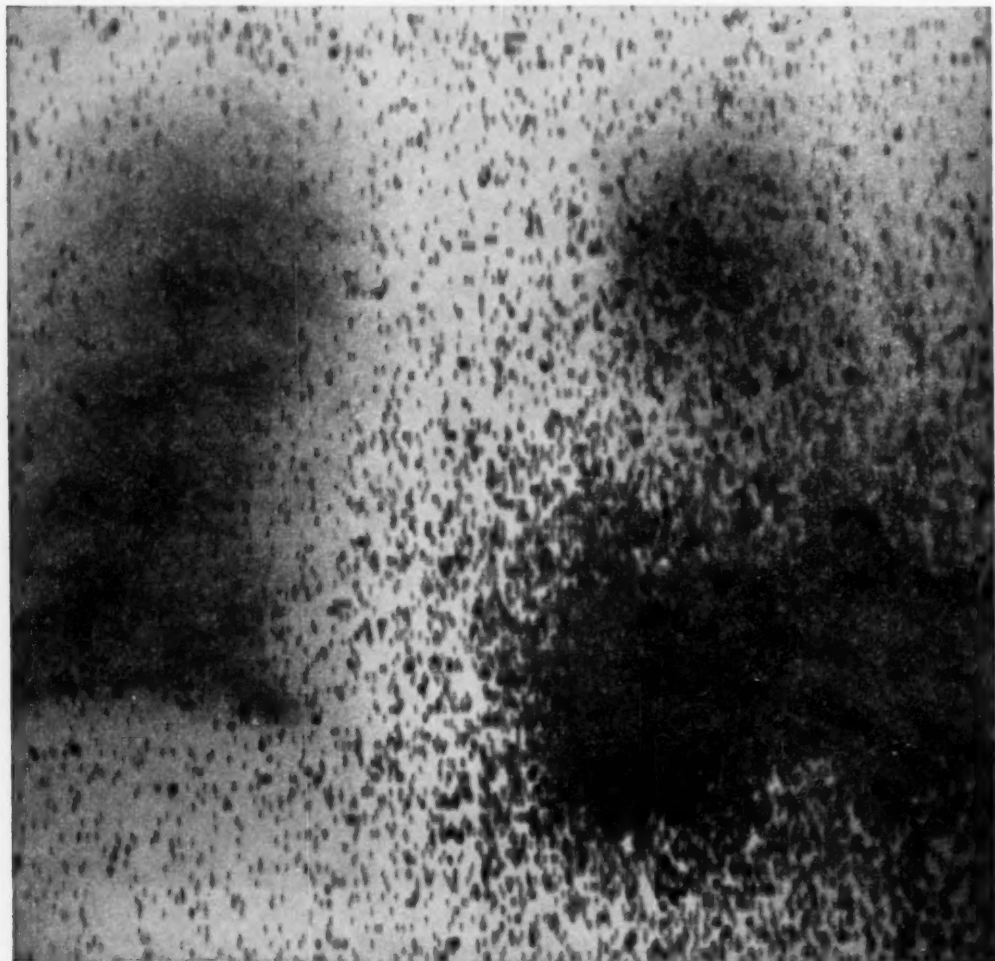
SECRETARY: Richard H. Young, *Northwestern University*

Self-portrait: Au¹⁹⁸

This photoscan shows the distribution of radiogold in the left pleural space of a patient with mesothelioma. A tracer amount has been injected to make sure that distribution is free so that the therapeutic dose of the radioisotope would not be dangerously loculated in a small area.

An insoluble colloidal dispersion, the radiogold is not absorbed into the circulation but is adsorbed on serous surfaces or phagocytosed. The mechanism by which it slows the rate of fluid accumulation is unknown.

The investigators who have published over 10,000 articles on radioactive isotopes in the past 10 years have enriched biomedical research. Their continuing advances in medical physics and radiobiology promise the contributions to our understanding of physiologic, pathologic and pharmacodynamic processes that lead to new developments in diagnosis and treatment. Lakeside Laboratories, Inc., Milwaukee 1, Wisconsin.



Photoscan courtesy of Vincent P. Collins, M.D., Department of Radiology, Baylor University College of Medicine, Houston, Texas

THERAPEUTIC DIRECTION THROUGH BASIC RESEARCH

L
LAKESIDE

Medical Education and American Specialty Boards*

JOHN McK. MITCHELL, M.D.†

School of Medicine, University of Pennsylvania, Philadelphia, Pa.

In the course of unprecedented advances in scientific knowledge during the past century it gradually became evident that, if a physician were to master the ever increasing amount of background information and the skill essential to its optimum clinical application, it would be necessary for him to confine himself to some particular aspect or "field" of medicine. Thus specialization began.

In the United States, the increasing demand for specialty training at first was met by the development of what were soon to become known as residency training programs in the clinical services of medical school-connected hospitals. As formally organized educational institutions, however, the medical schools exerted no direct control over these graduate teaching units. They were subject only to the planning of the individual chiefs of service and the limitations imposed by the facilities available in the hospitals where they were located. Naturally, this led to great variation in content, duration, and type of experience offered. The situation was still further confused by the inauguration of specialty training in nonmedical school-connected hospitals, the visiting staff members of which early recognized the value of having a house staff composed of able, highly motivated trainees for specialty practice.

At this time the goal of recognition as a "specialist" could be reached by a number

of different routes, some of them almost unbelievable. Any physician who developed interest and skill in some field of medical practice could restrict his work to it and call himself a specialist. A young physician could serve as an assistant to anyone having a specialty practice and by means of this "preceptorship" training become a specialist himself. Or, a recent graduate could go directly from his internship to residency training of indeterminate quality, and of a duration dictated solely by his own opportunities and whims, and then feel qualified to practice a specialty. Moreover, unfortunately, any physician could spend a few months, or even a few weeks, in a clinic abroad—while enjoying the cultural, gustatory, and entertainment advantages of some European capital—and then return a specialist. So patients, hospitals, and even the medical profession itself had no good means of distinguishing a bona fide specialist, with long years of superior preparation, from a self-entitled specialist with little or none.

The medical schools, fully occupied with raising their own standards and with no time or funds for new ventures, showed little interest in this matter, even though it was their own faculty members who were responsible for the vast majority of the better residency training programs that were fast developing. As time passed, there came into existence a number of graduate and post-graduate schools of medicine, but these failed to take hold in comparison with the residency training programs.

The first organized effort to control this

* Read before the Symposia in Honor of John Barlow Youmans, Vanderbilt University School of Medicine, December 5, 1958.

† Dean, School of Medicine.

unhappy situation was the incorporation in 1917 of the American Board of Ophthalmic Examinations (later changed to American Board of Ophthalmology).

In 1920, the Council on Medical Education and Hospitals of the American Medical Association organized fifteen committees, of nine members each, to study and "recommend what preparation was deemed essential to secure expertness in each of the Specialties" (5). Out of these committees emerged the pattern that was to be followed in the establishment of the nineteen Approved American Specialty Boards now in existence. Thus, the Boards arose primarily in response to the need for a mechanism to prevent dangerous shortcuts to specialty practice.

Then, because of the additional need for some central agency through which these American Boards could meet and consider their mutual problems, the Advisory Board for Medical Specialties was organized in 1934 (1). Although "advisory" in character, all American Boards are members, and this alliance serves as a strong deterrent to the organization of stray examining boards and the use of the title "American Board" by unofficial groups. The Advisory Board maintains a close liaison with the Council on Medical Education and Hospitals.

That is the story of how and why American Specialty Boards came into being. My purpose now is to explore their organization and functions; their relationship to, and effect upon, hospital-centered residency training programs; the methods by which they determine the competence of those whom they certify; and their role in medical education.

ORGANIZATION

All the nineteen Specialty Boards in existence in 1958 are incorporated. A "Board" consists of from nine to 23 "Members" or "Directors" (six have nine members, six have twelve) who are appointed for a definite term. Members are selected in various ways, but in the majority nominations are made by specified societies and election is

by the Board. The "nominating societies," usually three or more in number, include the appropriate "Section" of the American Medical Association. The other societies include the national organizations in the particular specialty. Most Boards have Secretaries or Executive Secretaries who serve for an indefinite term and who may or may not be "Members" of the Board. In a few of the larger Boards (in terms of number of certificate holders) these are full-time appointments.

Those who hold a certificate of a Board are known as "Diplomates" (sometimes loosely and improperly called "members"). All Boards make it clear that the certificate is not to be considered as a "license to practice."

The Boards are composed of volunteers who serve without recompense. One Board estimates that its members spend from 20 to 22 days away from home each year and must in addition carry out a good many duties at home. This is no mean sacrifice for a practitioner or a part-time faculty member, and Board members richly deserve commendation from the profession at large.

By their very nature Specialty Boards are loosely organized. The terms of old members expire, new ones are appointed. It is little wonder that at times they have not understood clearly their prescribed duties. Exactly what is their function?

FUNCTION OF SPECIALTY BOARDS

Each Board publishes a Statement or booklet setting forth, among other items, its function as conceived by that Board. Through these documents runs a common theme that may be expressed briefly as follows:

To establish minimal educational and training standards,

To determine whether candidates have received adequate preparation as defined by the Board in question,

To conduct examinations of eligible candidates,

To certify, as competent to practice the specialty, those physicians who have met its requirements and passed the examinations.

How well have the Boards fulfilled their functions?

THE ESTABLISHMENT OF EDUCATIONAL AND TRAINING STANDARDS

The Boards have first decided upon the amount of time that a candidate must spend in residency training and in practice or further study before becoming eligible to take the examination for certification. They have then turned their attention to evaluation of the residency training programs offered in different hospitals and, to this end, have set up Residency Review Committees in conjunction with the Council on Medical Education and Hospitals, and usually with at least one of their "Nominating Societies." These Committees have established minimal standards, and, through the staff of the Council, they conduct a site evaluation of every hospital residency training program that desires approval. On the basis of information so collected and the recommendation of the evaluator, the Committees then approve or disapprove the hospital for training in the specialty in question. Hospital programs are reviewed every 2 or 3 years. The list of approved programs under the name of the hospital are published each year in the Internship and Residency Number of the *Journal of the American Medical Association*.

While it is difficult to be certain of the effect of Specialty Boards on the development of residency training programs, it is not difficult to believe that it has been considerable, for residency training has become the preferred method of preparation for specialty practice by all Boards, and, since a stated number of years of training in residence has been prescribed, many physicians desiring Board certification have no doubt been stimulated to comply with the regulations. Whatever the cause, the growth of residency training programs has been phenomenal. In the 30-year period from 1927 to 1957 the number of hospitals with approved residency training programs has increased from 270 to 1199, and the number of resi-

dency appointments offered has grown from 1,699 to 28,528 (4). Meanwhile, graduate school courses, whether independent or under the auspices of a school of medicine, have with a few notable exceptions failed to flourish or have disappeared. Their total output of physicians has always been very small when compared with that of residency training. During the same 30 years, preceptorship training has essentially disappeared. Training abroad, except for a small number of internationally known clinics, has not been accepted by American Boards and has ceased to be an important factor. On the other hand, residency training in American hospitals for graduates of foreign medical schools has become very common, estimates indicating that foreign graduates represent about 20 per cent of the total residents in training.

The concept of learning, through a properly organized and progressively graded responsibility for the continuing care of sick patients under the supervision of attending physicians who are themselves responsible for the care of patients on the service, has become the heart of residency training in the United States. This principle has been espoused strongly by the Boards, and they have contributed to its development through their requirement or preference for residency training as a forerunner to certification.

There is no adequate basis for comparison of residency training with other methods as preparation for specialty practice. One can only say that it has been extraordinarily successful, if judged by the level of specialty practice in the United States as compared with that in other countries, by the present position of American Medicine abroad in relation to its position 50 years ago, and by the popularity of residency training in the United States among foreigners as a means of preparation for practice in their native lands. The Boards would therefore seem to be fully justified in requiring a specified number of years of residency training prior to examination for certification.

EXAMINATIONS

A discussion of the possible predictive value of examinations in determining the competence of the individual to practice a specialty may be of interest, since all Specialty Boards have adopted them as the final determinant for certification. For practical purposes, examinations represent the best procedure available to external agencies charged with comparative rating of individuals in large groups.

Specialty Boards commonly use two sets of examination, written and oral. The written examination serves as a screening device. Given first, it must be passed before the candidate is admitted to the oral test. Most Boards use an objective type of examination as best suited to the testing of large groups of candidates. When properly designed such an examination is "skewed toward the lower grades," where it becomes "relatively sensitive in the critical range," where passing or failing decisions must be made. The same test may be relatively insensitive at the upper level, but here exact selection becomes relatively unimportant, since all are obviously qualified (6).

Oral examinations, where the candidate usually comes before a series of individual examiners and where patients may or may not be used, are a form of testing that possesses certain virtues but is unquestionably open to criticism. Critics point out the danger of failing to cover essential important subjects or of concentrating on an area of weakness or, *per contra*, one of special competence of the candidate, the risk of "hobby riding" by examiners, the interaction of personalities leading to a good or poor rapport between candidate and examiner, and to the effect of stress on the candidate's performance.

The advocates of oral examinations admit the validity of the above objections but believe that they can be overcome. A properly structured oral examination should touch on a wide range of topics any of which may be probed in depth if the examiner wishes; it will relegate "hobby riding" to a minimum. The skilled examiner, aware of the pitfalls of

interpersonal reactions, discounts the engaging personality of one, admits his lack of rapport with another, and takes into account the excessive degree of nervous tension manifested in a third. Experienced examiners succeed in putting most candidates at ease as the examination progresses, but there are a few candidates who seem to "lose their heads" for its duration. Failure for them may, at first glance, seem unfair, but it should be remembered that a physician must often make his most crucial decisions under circumstances of great stress, so the manner in which the candidate reacts under the pressure of examination may be relevant.

In addition to medical knowledge and to skill in its application, many intangible factors enter into success in the practice of medicine—motivation, energy, drive, the ability to work long hours, attention to duty, empathy with patients, physical health, emotional stability, a happy choice of location, not to mention "good luck" and "a good wife." It would be hard enough to measure a doctor's relative competence in a community under any circumstances and by any means, but to assess the importance of these intangibles would immeasurably compound the difficulties. No matter how well an examination might be designed to measure medical "know-how" at a given point of time, it would not necessarily correlate closely with an estimation of success in the practice of medicine judged a specified number of years later.

The most one can hope to do in a Board examination is to measure the candidate's current fund of medical information and estimate his ability to translate this information into the diagnosis and treatment of disease in his special field. This I believe the Boards accomplish with a relatively high degree of success. I do agree with Meyers (2), however, that the Boards should try to check the results of their examinations "against the evaluation of observers on the scenes of action." The difficulties of doing this in the years of practice have been pointed out, but there is an opportunity

to measure performance in the examination against that in residency training because "long-sustained observation and consensus evaluation by a number of observers" are available through the chief of service and his staff, who incidentally are highly competent to render judgment.

CRITICISMS

Most of the criticisms against the Specialty Boards that I have heard personally have come from those who actually knew very little about the Boards and who tend to hold all Boards responsible for some action taken by one Board at some period of its existence. There is no doubt that at one time or another certain Boards have adopted policies not in keeping with their announced functions. These transgressions of the past have been corrected, however, for in 1955 the Advisory Board for Medical Specialties adopted a set of principles of operation with which it is hard to find fault.

One criticism of a different nature should be considered—the fear that the Boards might exert too much authority over residency training programs. First, it should be realized that the most a Board can do is say that it will grant credit toward certification only to those hospital training programs approved by the Residency Review Committee. This Committee in its turn can withhold approval, which means only that the residents in that hospital will not receive Board credit. In actual practice such approval is withheld only at the lowest level of performance or for gross deficiencies—as, for example, lack of experience with newborns or of outpatient service in Pediatrics. Close control of programs by the Boards would be virtually impossible even if it were not true because of the extent of the operation. In 1957 there were 5,134 separate approved programs involving over 28,000 appointments. To be sure there are several sub-specialties that have only a relatively small number of approved programs, but these are in such highly specialized areas that the number of candidates is small. Meanwhile, the

Residency Review Committee representing a Board of average size will have as many as 250 programs scattered throughout the country, while the larger Boards will have more than 600.

FOREIGN MEDICAL GRADUATES

A present-day evaluation of American Specialty Boards in medical education would be incomplete without reference to their role in the training of foreign medical graduates. In 1957, 21 per cent of all residents (interns excluded) were graduates of foreign medical schools (Canadian graduates represented 2.5 per cent of these) (4). Since the majority of these residents will return to their native country, this represents a significant contribution to world medical education by residency training programs in this country. Since American Specialty Boards have contributed so largely to the growth of such programs, the Boards share indirectly in this contribution. A number of Boards now admit to examination foreign graduates who have had residency training in the United States, and if they pass they are issued a foreign citizen's certificate. This procedure is well liked by foreign graduates and unquestionably increases the number who come to this country.

SUMMARY

1. Specialization in medical practice created a demand for training beyond the internship. Residency training programs were developed to meet this demand.

2. American Specialty Boards arose in response to a need for a mechanism that would prevent dangerous shortcuts to specialty practice.

3. Although residency training programs were developed principally in medical school teaching hospitals, the schools have never exerted direct control over them.

4. Board requirements of a specified number of years of residency training in approved hospital programs in order to become eligible for certification have contributed greatly to the growth of residency training programs.

5. The Boards, in conjunction with the Council on Medical Education and Hospitals and certain specialty societies, have established Residency Review Committees which evaluate residency training programs.

6. The Organization of Boards has been described.

7. The Boards have defined their own functions clearly. The examination of candidates for certification is one of the most important of those functions. The nature and value of the examinations have been discussed.

8. The present relationship of the Boards to the graduates of foreign medical schools who are undertaking residency training in this country has been described.

REFERENCES

1. KIRKLIN, B. R. The Specialty Boards. *J.A.M.A.*, **160**:1327-29, 1956.
2. MEYERS, R. A Critical Look at Medical Education in the United States with Comments on the Role of Specialty Boards. *Perspectives in Biology and Medicine*, **1**:48-68, 1957.
3. Hospitals Approved for Residencies in Specialties. *J.A.M.A.*, **88**:829-39, 1927.
4. SPRINGALL, ARTHUR N., HINMAN, JOHN, and THOMPSON, WILLARD V. Graduate Medical Education in the United States. *J.A.M.A.*, **165**:453-60, 1957.
5. TURNER, E. L. Background and Development of Residency Review and Conference Committees. *J.A.M.A.*, **165**:60-64, 1957.
6. Special Article by American Board of Pediatrics Examination Committee. Report on 1958 Written Examination. *Pediatrics*, **22**: 1001-5, 1958.

Daniel Drake (1785-1852), Persevering Idealist

CHAUNCEY D. LEAKE*
The Ohio State University, Columbus, Ohio

The prime prerequisites for a successful career in medical practice are those which blend understanding and enthusiasm for both science and art. Scientific interest is necessary for verifiable knowledge about ourselves and our environment in health and disease. An artistic approach is essential for good judgment in applying this knowledge for the welfare of a physician's individual patients.

This combination of interest in both the sciences and the humanities is part of the background which contributes to the broad scope of medical teaching. It is significant that early medical leaders in the United States had such an enthusiasm for both these facets of learning that they created situations for sharing them. They brought high scholastic ideals to the medical schools they established, schools which were needed to meet demands for medical care in the fast-growing country. But the enthusiastic young medical teachers, like all idealists, had a tough time.

Among those youthful pioneering idealists who lit lamps of medical learning in the wilderness west of the colonial seaboard was Daniel Drake (1785-1852). He helped arouse the civic consciousness of Cincinnati; he was an inspiring teacher; and his scholarly contributions won him world fame. Above all, he was a persevering idealist, continually striving, in spite of his peripatetic pattern, to develop worthy standards for medical education and practice.

*Professor of Pharmacology and Lecturer in the History and Philosophy of Medicine and Public Health at The Ohio State University, Columbus, Ohio.

DRAKE'S EARLY LIFE

Flying swiftly across country these days, it is hard for us to imagine how our ancestors made their treks. Westward over the long diagonal ridges of the Allegheny range went the early settlers after the turmoil of the Revolution. It was a long, rough 400 miles from the gentle valleys of northern New Jersey to the rolling hills along the Ohio River. Part of these migrants, a colony of New Jersey Baptists, settled near Maysville, Kentucky.

In the spring of 1787, Isaac Drake, his wife, and their toddling son and infant daughter joined this colony. They spent the summer in a covered sheep pen, while the men of the group of five families built log cabins on the 1,400 acres they had purchased. Isaac Drake had arrived with only enough money to buy a bushel of corn. His share of the community land was 38 acres. Clearly the grist-mill he had left at Plainfield, New Jersey, had not flourished.

There Daniel Drake was born on October 20, 1785. He grew up in the Kentucky forests under the guidance and instruction of his mother and itinerant preachers. Looking back on his boyhood, Daniel recalled that "the woods were a school of beauty." He had deep affection for his mother, from whom he said he acquired the tendency to shed tears easily and to fall asleep in church.

Gradually the fortunes of the impoverished family improved. The farm grew to 200 acres; soon another son was born. Daniel's uncle, Cornelius Drake, a tavern and storekeeper, sent his son John to study medicine under Dr. William Goforth, a member of the New Jersey Baptist colony.

It was Daniel's fascination with his cousin's medical books that influenced him to become a physician.

When John Drake died just as he was graduated from the University of Pennsylvania, Daniel may have inherited his medical books. Until then, his own library consisted of copies of the Bible, *Pilgrim's Progress*, *Gulhrrie's Geography*, *Aesop's Fables*,



PORTRAIT OF DANIEL DRAKE

and *Chesterfield's Letters*. Daniel, backed by his family, determined to follow his cousin's example in a medical career.

DRAKE'S MEDICAL TRAINING

Dr. William Goforth (1766-1816) was a precise, wigged, and winning practitioner who had been trained in New York. He fled west during the scandals of the "Doctors Mob" in 1787, which had erupted over claims of grave robbing for dissection in New York's medical school. After more than a decade of successful practice near Mays-

ville, Kentucky, Dr. Goforth went to Cincinnati, the rough frontier town where his father was a respected judge.

In 1800 Daniel Drake headed for Ohio, where he was to be apprenticed to Dr. Goforth. It took him and his father several days to get to Cincinnati from Maysville that cold December. In the small town of only 750 settlers, Drake's work began at once: reading Quincy's *Dispensatory* and making mercury ointment. His father paid Dr. Goforth \$400 for his son's training.

Dr. Goforth, a good, though erratic, teacher, was impressed by Jenner's work on cowpox vaccination against smallpox. Procuring some cowpox, he successfully vaccinated Drake before the end of 1800. Later he took Drake with him to hunt mastodon bones at Bigbone Lick in Kentucky and had his pupil aid him in preparing ginseng for export to China.

Surreptitiously Drake read the medical writings of the famed Philadelphian, Benjamin Rush (1745-1813) whom Goforth disliked. Drake, however, persuaded his preceptor to follow some of Rush's ideas. Indeed, Drake made such an impression on Goforth that they became partners in practice in 1804.

At that time the road to Philadelphia went through Cumberland Gap and Winchester to Baltimore, whence drugs were sent by express. A dose of Dover's powder or Glauber's salt or paregoric cost a quarter, and an ounce of Peruvian bark for fever was a dollar. Yet a visit to a patient's home cost only a quarter.

Writing to his father, Drake commented on the trustfulness of Dr. Goforth, indicating that they might enter as much as \$6.00 a day on their books and collect less than a third of that. Although he complained of his inability to buy the books he needed, he would not borrow.

In 1805, Dr. Goforth issued Drake a diploma, testifying to his zeal and ability in medical practice. This is said to be the first medical diploma issued west of the Appalachian mountains. That autumn Drake

went to Philadelphia to study at the University of Pennsylvania.

Drake's courses and fees at the University of Pennsylvania included: anatomy under the famed Caspar Wistar (\$20); chemistry under Peter Woodhouse (\$20); surgery under Phillip Syng Physic (\$10); and physic with the renowned Benjamin Rush (\$20). Drake lived frugally, but he enjoyed the bustling life of the big city.

He worked during the five-month lecture and dissection period and then returned to his parents' home to practice. Dr. Goforth had been developing an interest in French culture and, on deciding to go to New Orleans, asked Drake to take over his practice in Cincinnati. In 1805 Drake moved with his parents to the booming Ohio River town and quickly built up a flourishing practice. He became the physician of William H. Harrison (later President), Nicholas Longworth (who founded the clan), and Judge David Burnet, whose brother, William, from Princeton, also practiced medicine.

DRAKE'S COMMUNITY SERVICE

Soon after returning to Cincinnati, Drake married Harriet Sisson, niece of Colonel Jared Mansfield, surveyor-general of the United States. In keeping with current customs, Drake wrote poetry for his wife in the contemporary romantic style, and the happy couple took long walks together over the surrounding hills and along the Little Miami. Drake made detailed notes on the topography, climatic conditions, geology, flora, and fauna of the area. He attempted to correlate these data with his experience related to the endemic diseases.

Misfortunes were inevitable: Drake got pneumonia; then the newborn daughter died of "croup" within a year. Thereafter, Drake buried his grief in work. In 1810 he published a booklet entitled *Notices of Cincinnati, Its Topography, Climate and Diseases*, at which some of the citizens sneered.

Supported by his prospering practice, Drake built a home and, in 1813, bought a drugstore. The store, which was run by his brother Benjamin, later was expanded into a

sort of department store selling hardware and groceries and featuring a soda fountain.

In 1815, Drake's remarkable *Natural and Statistical View or Picture of Cincinnati and the Miami Country, Illustrated by Maps, with an Appendix Containing Observations on the Late Earthquakes, the Aurora Borealis and Southwest Winds*, was published. Although it was the first book to be published in the city and many scoffed at it, it was an immediate success along the East Coast and even in Europe, where it was translated for emigrants. Drake became famed for this neat, 250-page book, which he dedicated to his wife's uncle, Colonel Mansfield.

Drake, the enthusiast, wanted to share his interests by teaching medicine as he thought it should be taught—with fervor. But he lacked the prestige of the formal M.D. degree, and, even though he was a popular practitioner, he realized that the degree would help in furthering his ambition.

In October, 1815, Drake decided to return to Philadelphia to complete the required courses for a degree in medicine at the University of Pennsylvania. Drake and his wife went to Philadelphia, leaving their two young children with his parents. During the winter he became sick, and one of the children died. Yet, in the spring of 1816, Drake finally received the degree M.D., and he and his wife returned to Cincinnati. Apparently he learned little about medicine during this trying winter.

Back in Cincinnati, as his practice continued to grow, his civic duties increased. He became a trustee of Lancaster Seminary, which soon became Cincinnati College; he organized a Library Society in order to promote a public library; he organized the first Episcopal church in the city; and, in order to aid the community educational effort, he started a Literary and Debating Society as a sort of adult education venture.

At that time Drake must have been considering the organization of a medical school in Cincinnati, although he probably did not get much encouragement from his medical colleagues. He may have been a poor organi-

zation man, for he was unconventional in his wide range of interests and enthusiasms. He was clearly one to be cut down to size, in the small, highly competitive, fast-growing, but very conservative community.

DRAKE'S MEDICAL TEACHING

In searching for a way to start a medical school where he could indulge his ambition for teaching, Drake undoubtedly realized the importance of association with some college or university. This may have been the reason why he supported the development of a college in Cincinnati.

Meanwhile, he certainly was aware of the civic rivalry between Lexington, Kentucky, and Cincinnati. Lexington had been the earlier settlement for the pioneers moving westward, but Cincinnati, with the advantage of river traffic, rapidly began to surpass Lexington. However, Transylvania University, which had been established in Lexington, set a relatively high standard for collegiate education on the new frontier. There Benjamin W. Dudley (1785-1870), a distinguished surgeon and lithotomist, had succeeded in establishing a medical school under the auspices of the university. Dudley invited Drake to become Professor of *Materia Medica* there when the faculty was being organized in 1817.

After some deliberation, Drake accepted, hoping to find at Transylvania the sort of academic retreat he idealized. Lexington might provide the scholarly atmosphere to inspire youngsters to high standards of medical work, an area where such standards were badly needed.

The original effort toward organizing medical instruction at Transylvania University had occurred earlier, in 1799, when Samuel Brown (1769-1830) was appointed professor of the Theory and Practice of Medicine and of Chemistry. No satisfactory systematizing of medical instruction occurred, however, until 1817. Then with some 7,000 inhabitants, the community was large enough to support classes for medical training. Drake moved to Lexington, leaving his

practice in Cincinnati in the charge of Dr. Coleman Rogers.

Drake left Lexington at the end of the first teaching session, in the spring of 1818; there had been differences of opinion among the faculty. The fiery Dudley had fought a duel, and Drake had attracted bitter criticism from envious physicians in Lexington.

Back in Cincinnati, with improved health, Drake determined to push for the organization of medical teaching in his home community. After planning a systematic course of instruction with his associate, Dr. Coleman Rogers (1781-1855), they obtained the support of the Rev. Elijah Slack (1784-1866), president of the Lancaster Academy. A graduate of Princeton, Slack had taught the natural sciences, organized the Cincinnati Medical Society, and served as its president.

On November 10, 1818, informal lectures on medicine were instituted by Drake, Rogers, and Slack; this session closed in March, 1819. These three, the first medical teachers in Cincinnati, lacked charter organization or authority for granting diplomas. Subsequently, in 1819, Drake dissolved the partnership and announced that he would receive students for perceptorial instruction.

Drake promptly began to organize the Medical College of Ohio. On the whole, the people of Cincinnati, then a booming town of 10,000 inhabitants, were in favor of the venture. However, the local physicians were not sympathetic; they feared competition from the young doctors who might be graduated and were jealous of Drake, who, at thirty-three years of age, was the most acclaimed physician of the area. After obtaining a charter in 1819 from the Ohio Legislature, Drake tried to organize teaching with Dr. Coleman Rogers, the Rev. Elijah Slack, and Dr. Samuel Brown, of Lexington. However, neither Brown nor Rogers would serve on the faculty. Within that year Drake also established the first public hospital in Ohio. Created by the Legislature in Cincinnati as the "Commercial Hospital and Lunatic Asylum of the State of Ohio," this institu-

tion was organized to provide clinical facilities for instruction in the new school.

The first session at the new school began November 1, 1820, with a class of 24 students meeting on the second floor of a building at 91 Main Street, where Isaac Drake and Company conducted a general store. There Drake lectured on the theory and practice of medicine and on obstetrics and diseases of women and children. The Rev. Elijah Slack taught chemistry; Dr. Jesse Smith (1793-1833) taught anatomy and surgery; and Dr. B. S. Bohrer (1788-1861) taught materia medica. There were only four teachers in the new medical college, but the University of Pennsylvania, the foremost medical school in this country at the time, had only six professors. Drake thought he was doing well.

The course of study in the new school was the standard two terms plus a thesis. Drake stimulated writing quality by offering a silver medal to the student submitting the best thesis. Fees were \$20 for each professor, plus an additional fee of \$5 for admission to the hospital and to the library. Students were expected to aid the faculty in getting bodies for dissection, a practice involving some danger.

There seem to have been continual disagreements among the faculty. Shortly after the graduation in March, 1822, resignations occurred, Drake presented bills, and a remarkable faculty meeting was held. At that meeting, by direct vote, Drake was dismissed from the staff. This ridiculous situation resulted because the Board of Trustees of the College was composed of the members of the faculty. Drake appreciated the humor of the situation but was deeply chagrined. The outraged people forced the trustee-faculty to reinstate Drake, who then promptly resigned.

Meanwhile, it was clear that no medical school could be operated by its own faculty. Accordingly, an independent Board of Trustees was established by act of Legislature in 1822, but the new college vegetated. When, in 1823, Drake was again asked to become Professor of Materia Medica at

Transylvania Medical School in Lexington, he moved there with his family.

Transylvania was then at the height of its glory. Its faculty comprised the most distinguished physicians in the West, and there were some 320 medical students in attendance. Drake built up a large consultation practice in Lexington and was highly respected by his colleagues, his students, and his fellow citizens. It was there that he probably was associated with Dr. Samuel Brown in the development of the remarkable Kappa Lambda Society of Aesculapius, an organization dedicated to improving the standards of medical education and practice. One of the most important acts of this society was to develop a "Code of Ethics" based on the famed "code" established by Thomas Percival (1740-1804) for the guidance of the physicians, surgeons, and apothecaries of the Manchester Infirmary in England. The society, which had chapters in all large American cities, published the *North American Medical and Surgical Journal*. While it may have helped to improve medical standards in the United States, it became a powerful political organization in medical affairs. Resulting abuses led to its dissolution around 1835.

In October, 1825, Drake's wife died soon after contracting an incurable fever. In burying her in the Presbyterian Cemetery in Cincinnati (now Washington Park), Drake started a movement to improve the appearance of the cemetery by planting trees in the area. For years he mourned his inspiring wife.

That same year Drake became Dean of the Medical College at Transylvania, but, in 1826, he decided to return to Cincinnati for the welfare of his family. His colleagues referred to his departure from Lexington as a "severe calamity," and it was felt that the school started to decline when he left.

After returning to Cincinnati, Drake suffered a severe attack of meningitis. On recovery, he promptly opened the Cincinnati Eye Infirmary. His next project was planning the organization of another medical

school in Cincinnati, one that would give solid instruction and not repeat the poor record of the Ohio Medical College.

His plans were aided by a call to teach at Jefferson Medical College, Philadelphia, in 1827. He deliberately accepted the offer for the purpose of attempting to recruit an outstanding faculty for a new medical school in Cincinnati. Lecturing for one session at Jefferson, he made a marked impression on the class of over a hundred students, and was widely honored for his medical achievements. He was made a member of the American Philosophical Society and of the Royal Society of Natural History of Edinburgh.

In 1831, Drake helped found the *Western Journal of the Medical and Physical Sciences*, which, in its first issue, announced the establishment of the Medical Department of Miami University. Daniel Drake was both Dean and Professor of the Practice of Medicine of the new medical school. He took with him to Miami John Eberle (1787-1838), a distinguished Philadelphia physician and well-known medical editor whose two-volume work on therapeutics was especially appreciated.

The announcement of the new school upset the medical picture in Cincinnati. Hence, after much haggling, the idea of the new school was withdrawn, and Drake and Eberle were made Professors in the Ohio Medical College. Because of personality conflicts in the new arrangement, there was difficulty ahead; Drake found an implacable enemy in the Irish physician, John Moorhead (1784-1873). Moorhead, who had been trained at Edinburgh, vigorously disliked Drake on first meeting him, and even engaged in a fistfight with him. Moorhead was a slow, dignified man, clumsy but determined—no match for the electric and eloquent Drake. The twenty-year feud between these two ceased only when Moorhead's father died and he returned to his Irish estate, where he settled as Sir John Moorhead in 1849.

While the physicians tried to work together, it seemed impossible to eliminate fits

of jealous outbursts and absurd regulations. The faculty, through personal donations, enlarged the library and tried to improve the equipment of the school. Drake attempted to set a standard for effective medical education by writing a series of seven famed essays on "Medical Education and the Medical Profession in the United States." These were published in 1832 and dedicated to the students of the twelfth class at the Medical College of Ohio.

These outstanding essays of Drake's set extremely high criteria of selection, training, and practice. Drake called for a graded course of four years of instruction, demanded a classical education for admission to study medicine, and insisted on the necessity of direct bedside instruction. The titles of these celebrated essays are (1) "Selection and Preparatory Education of Pupils"; (2) "Private Pupilage"; (3) "Medical Colleges"; (4) "Studies, Duties, and Interests of Young Physicians"; (5) "Causes of Error in the Medical and Physical Sciences"; (6) "Legislative Enactments"; and (7) "Professional Quarrels."

It is clear from the titles alone that Drake was seriously concerned with improving standards of medical education and practice. These same problems which prompted the establishment of the Kappa Lambda Society of Aesculapius also led, in 1846, to the founding of the American Medical Association. Drake's seven essays are considered the outstanding contribution from the first part of the nineteenth century toward the development of sound medical education in the United States.

When, in 1832, it was clear that he could not withstand the continued jealous criticisms of his colleagues, Drake resigned again from the Ohio Medical College. That was the year in which cholera struck Ohio. Americans had watched fearfully for over a decade as epidemics of cholera spread from India across Asia into Europe. Cholera hit England in the summer of 1831, and appeared the next year in New York City. In July, 1832, Drake warned publicly: "There is no longer any ground for hoping that we

shall not be invaded." He anticipated the attack by issuing a 180-page book on the *History, Prevention, and Treatment of Epidemic Cholera* for both popular use and medical reference. Cincinnati became a city of horror: the dead numbered 576, about 2 per cent of the population; business was at a standstill. Drake insisted on developing adequate sanitation facilities including sewage disposal, street cleanliness, and precautionary habits among the people. Although his efforts were not popular, Drake persisted.

The cholera epidemic of 1832 was just one of many problems which interfered with Drake's major interest in medical education. His *Practical Essays on Medical Education and the Medical Profession in the United States* was considered a failure locally. Its influence, however, has grown with the years until it was hailed by the noted medical historian, Fielding Garrison, as "far and away the most important contribution ever made to the subject in this country." It was reprinted by the Johns Hopkins Press, Baltimore, in 1952, and remains an inspiring source of wisdom for effective medical education in accordance with the best traditions of the profession.

In spite of envious criticism from his medical colleagues in Cincinnati and in the state capital, Columbus, Drake continued his efforts for improving medical education. However, he was conducting a bitter personal wrangle with his former colleagues of the Medical College of Ohio. As classes degenerated and the school became disorganized, it developed a nation-wide reputation of being a "rotten institution." Drake, determined to found a first-class medical school in Cincinnati, revived Cincinnati College and established a medical department within it.

When the medical department of Cincinnati College opened in 1835, an immediate effort was made to clarify the situation by getting Drake back to the Medical College of Ohio. Drake had been successful in getting John C. Cross (1798-1855), a good writer and fine teacher, from Transylvania at Lexington as Professor of Materia

Medica. Cross became a close friend of Eberle and Drake, but, at the reorganization of the Medical College of Ohio, in 1837, Cross and Eberle both returned to Transylvania.

The complicated details of this trying time for medical education in the Midwest may be followed in the detailed account by Otto Juettner, *Daniel Drake and His Followers, Historical and Biographical Sketches* (Cincinnati: Harvey Publishing Co., 1909). This dreary story of intrigue, personal ambitions, jealousies, and disgraceful publicity in medical education and practice was repeated in varying patterns in most of the major cities of the United States through the nineteenth century into our own era. Starting in Philadelphia and New York, these trends spread through the South and into the far West.

Despite the highest professions of good will, honesty, and capability on the part of individual physicians, the fact remains that medical education in the United States throughout the nineteenth and into the twentieth century was a messy affair. With no system for regulation, either on the part of society or on the part of the profession, it was a battle of personalities in every major community. Nevertheless, there did develop some evidence of progress and improvement. Although Drake had clearly expressed the ideals of sound medical education and practice, he was as incapable of following his own standards as was anyone else at that time.

Drake's control of the *Western Journal of Medicine and Surgery* placed him in a favorable position for his efforts toward improving medical education. The Medical Department of Cincinnati College opened in 1835 with a good faculty which Drake had recruited from various parts of the country. His most important acquisition was Samuel D. Gross (1805-84), who came from Jefferson Medical College to serve as Professor of Pathology.

With two medical schools in Cincinnati, the competition was unpleasant; the students even had fistfights. Continual public

criticism of one school or the other aroused repeated legislative investigation. With eight men on the faculty, initially Drake's school went well. Eventually suffering from lack of endowment, the school had to be abandoned in 1839. After Gross wrote his great *Elements of Pathological Anatomy* for publication, he was asked to become Professor of Surgery in the University of Louisville. When Gross accepted the new post, Drake accompanied him to Louisville.

Meanwhile, Willoughby Medical College was established near Cleveland, Ohio, largely through the efforts of the famed John Delamater (1787-1867), who had done so much to develop the Fairfield School in New York. Delamater also taught at the Medical College of Ohio and later established the Cleveland Medical College. With Drake, he successfully stimulated the development of sound medical education in the Ohio area.

In 1840, Drake, as Professor of Medicine, joined his colleague, Samuel D. Gross, at the Louisville Medical College, where he helped to promote the reputation of that thriving institution. Thus, while Louisville advanced, Transylvania and Cincinnati declined. Meanwhile, Drake traveled all over the Midwest, studying local climatic conditions, drainage problems, and diseases.

Briefly, in 1850, Drake returned to the Ohio Medical College, which was beginning to thrive on a solid basis. Because the old animosities persisted, after a year Drake returned to Louisville. Even there his vigorous personality did not fit into the picture. Gross had gone to Philadelphia, so Drake returned to the city he loved to be reinstated at the Ohio Medical College in Cincinnati. The vigor of his travels, the hard work he had put into his practice, and the difficulties he had had in promulgating his educational ideas combined to break his health. Soon after Drake returned to Cincinnati, he died.

DRAKE'S WRITINGS

Daniel Drake enjoyed writing: from 1810 to 1852 he published 18 books and pam-

phlets in addition to a large number of medical articles, editorials, and miscellaneous other writings. His *Picture of Cincinnati*, issued in 1815, achieved a world-wide reputation. His *Inaugural Discourse on Medical Education*, in 1820, set the tone for many of his later writings on this subject. Outstanding were his *Practical Essays on Medical Education and the Medical Profession in the United States* (1832). He continued to write on medical education and medical practice, advocating improved ethical considerations, as in his *Moral Character in Students of Medicine: An Introductory Lecture* (1847).

Drake's professional writings included *A Discourse on Intemperance* (1828), *A Practical Treatise on the History, Prevention, and Treatment of Epidemic Cholera* (1832), and *A Memoir on Milk Sickness* (1841).

A major contribution was the two-volume account of medical geography, *A Systematic Treatise, Historical, Etiological, and Practical, on the Principal Diseases of the Interior Valley of North America* (1850-52), which Drake published toward the end of his life. This remarkable work, which established Drake as one of the outstanding medical writers of the nineteenth century, became a classic in geographical medicine. The detailed observations recorded by Drake testified to the hard work he put into his note-taking and studies during the travels he made throughout the Mississippi Valley.

Drake wrote vigorously for the *Western Quarterly Reporter of Medical, Surgical, and Natural Science*. This publication, begun in Cincinnati, in 1822, by John D. Gotman (1794-1834), lasted only six issues. In 1826, the *Ohio Medical Repository* was established by several Cincinnati physicians; when it was turned over to Drake the following year, he continued to issue it under the title *Western Journal of the Medical and Physical Sciences*. In 1840 Drake took the *Journal* with him to Louisville, where it was combined with the *Louisville Journal of Medicine and Surgery*.

To these journals Drake contributed many technical and professional articles.

These efforts, however, were incidental in comparison to his monumental attempt at classifying and describing all diseases encountered in the "interior valley" of the United States.

DRAKE'S PERSONALITY

A man's personality is the reflection of many complex factors, including boyhood conditioning, adolescent environment, internal drives, and reactions to surroundings. Daniel Drake was a controversial personality; he was a vivid, keen, sensitive, highly imaginative, brilliant, dynamic, and idealistic leader. These characteristics endeared him to those whom he inspired, but they alienated him from those insecure enough to fear his stimulus. Accordingly, Drake was well respected by his patients and fellow citizens, adored by his better pupils, loyally supported by his friends, and hated by less wise, but more ambitious, colleagues and professional rivals.

Drake had a striking personal appearance. His good friend and fellow physician, Samuel Gross, said that he was "a handsome man, with fine blue eyes and manly features." Gross continued to describe him as always being well dressed, but wearing black cloth and crepe on his hat in mourning for his wife, even though she had been dead a number of years. Gross further describes him as being a good conversationalist with a merry laugh, a wide variety of stories, and inherent modesty. He abstained from using alcohol or tobacco; he never played cards, went hunting or fishing, or attended the theater. He apparently felt entirely self-sufficient with his own interests and ideals.

Drake remained closely associated with and devoted to his parents and all members of his family; he adored his wife whose memory continued to inspire him, and he always fulfilled his family responsibilities to the maximum. Drake also was intensely loyal to his community. He wanted the best possible for Cincinnati and did everything he could to raise civic standards and expand civic achievement. In addition to

promoting intellectual improvements, he championed movements for cleanliness, sanitation, and recreational areas.

Drake also was keenly aware of the commercial possibilities of Cincinnati. He tried to get a railroad connection between the Ohio Valley and the Atlantic Coast at Charleston, South Carolina. This ambitious project never got much beyond the talking stage, but Drake was influential in promoting the interests of Cincinnati in the over-all transportation system in the United States. He also was influential in the development of the canal system in Ohio, which was based largely on his early accounts of the drainage basins emptying into the Ohio River.

Although Drake's vigorous enthusiasm and unyielding devotion to high standards of medical education often led to difficulties, he did not let personal factors interfere with his firm stand for principle but patiently continued to maintain his idealism.

It was this idealistic leadership that endeared Drake to those who knew him and accounted for the overwhelming sense of loss which resulted when he died so suddenly of an acute fever in 1852. Posthumously, many of Drake's best ideas on standards for medical training and medical practice have been gradually appreciated as worthy of full implementation.

Drake must have suffered repeated frustration because he did not realize that his ideals for the best kind of medical education were so far ahead of his time that they were not likely to be followed by his associates. Nevertheless, he retained his ideals, apparently holding no rancor over disappointments he so frequently suffered—in every wholesome sense, a persevering idealist.

REFERENCES

- GROSS, S. D. *Lives of Eminent American Physicians and Surgeons of the 19th Century*. Philadelphia: Lindsay & Blakinston, 1861.
- . *An Autobiography*, 2:261-74. Philadelphia: G. Barrie, 1887.

- JIRKA, F. J. *American Doctors of Destiny*. Chicago: Normandy House, 1940.
- JUETTNER, O. *Daniel Drake and His Followers: Historical and Biographical Sketches*. Cincinnati: Harvey Publishing Co., 1909.
- MANSFIELD, E. S. *Memoirs of the Life and Services of Daniel Drake, M.D., Physician, Professor and Author; with Notices of the Early Settlement of Cincinnati and Some of Its Pioneer Citizens*. Cincinnati: Applegate & Co., 1855.
- MUMFORD, J. G. *A Narrative of Medicine in America*, pp. 369-96. Philadelphia: J. B. Lippincott, 1903.
- PACKARD, F. R. *History of Medicine in the United States*, 2:790-821. New York: P. B. Hoeber, 1931.

Conformance, Originality, and Responsibility in Higher Education

JURGEN RUESCH, M.D.*

Department of Psychiatry, University of California School of Medicine, and The Langley Porter
Neuropsychiatric Institute, San Francisco, Calif.

The ancient proverb, "When in Rome, do as the Romans do," serves as a reminder that the Romans bequeathed to us the Latin verb *conformare*, which eventually became the English "to conform," meaning to shape according to some model and to establish correspondence in form, manner, or character. In the seventeenth century the term was frequently employed to indicate compliance with the usages of the Church of England; and although in today's vocabulary "conformance" and "conformity" still refer to people's uniformity in thinking, feeling, and action, the standards are not, as in the past, set by an ecclesiastical or secular authority but by the people themselves. At the present time, the majority of Americans are characterized by a built-in readiness to look to their peers for cues to guide their own normative behavior, and through a complicated feedback system everybody becomes a model for everybody else—either to be imitated or to be rejected. People look to neighbors, business associates, and social acquaintances for guidance and enlightenment, and it is precisely this collective orientation that characterizes the cultural matrix in which we live.

A TECHNOLOGICAL CIVILIZATION IMPOSES CONFORMANCE

Once upon a time, when people lived in relatively autonomous communities which were geographically isolated and connected by sparsely traveled roads, the economy

of the settlement required that its citizens be specialized and evolve a way of life that suited their occupations. The blacksmith worked and associated with different people and wore a different garb than the merchant, the shepherd, or the soldier. Although respect for the church and the state—and particularly recognition of property rights and acceptance of taxation—were reinforced, conformance to standards and traditions occurred primarily within an individual's own class and caste (39). However, with the advent of a more classless society, people gave up their specialized styles of living, and even the linguistic barriers diminished. The invention of the printing press marked the end of the monopoly for written communication; and, as reading and writing were made available to all (14), the differences between people diminished further.

Knowledge of signs and symbols is the basis upon which a technological civilization is built. Mass production can be profitable if the people are educated to consume similar goods and when the diversity of models is kept to a minimum. If both rich and poor eat the same canned tomato soup and drive the same kind of automobile, industry is assured of a greater market, and the distribution of goods is simplified; but the use of identical products levels differences between people further and forces a kind of adaptation upon the human being which leaves him little room for individual fancy. The preparation for using standard gadgets begins early in life. While the child is exposed

* Professor of Psychiatry, Univ. of California School of Medicine.

to toy railroads, tricycles, and cap guns, the adolescent is trained to handle automobiles, washing machines, and mixmasters. Thus, many behavior patterns which are dictated by the machine become standardized. Man, having invented the machines to extend his sensory-motor system, becomes in turn an extension of the machine itself (11).

While in the past farmer together with farmer, cobbler with cobbler, and blacksmith with blacksmith worked side by side, using the same tools and performing similar tasks, modern men work in teams, using different tools and pursuing specialized tasks. In order to avoid chaos, the countless thousands who work in factories, offices, and shops are welded into human organizations. The administration of such organizations has been standardized in turn, and today it has become so uniform that the top officers are almost interchangeable (46); the differences between a university president, a general, and a union leader have become negligible (13). To live in such organizations, people have to learn a uniform language—"officialese"—which has little if any resemblance to the living language. Since the usage of words shapes the thinking of people, the vocabulary and syntax prevailing in a modern bureaucracy further reinforce the uniformity of assumptions and simplicity of presuppositions (45) of its members.

However, conformance and standardization are achieved not only through modification of the vocabulary but also through control of information. In a modern technological civilization, thousands and millions of people are devoting their time to the organization of information that controls men and machines (47). Such control involves not only the writing, reading, sorting, and filing of documents—activities commonly associated with paper consumption and bureaucracy—but also the active manipulation of symbolic systems. The business man cannot sell magazines, washing machines, and deodorants unless the consumer has been primed to desire such products.

In a feed-back system in which each

person takes his neighbor as a model, it requires very little to introduce a new trend (33). If a few key people use a certain product and this gets to be known, everyone else will jump on the bandwagon. Propaganda and advertising are based on the prerequisite of a rather widespread feed-back system. News travels rapidly, and clever manipulators utilize circuits that enjoy wide circulations to insert significant symbols. They may start a rumor inducing the population to buy or sell stocks, real estate, or consumer goods; or they may spread news which can deeply influence the course of an election. In our dynamic civilization, socially mobile people have learned to use the right kind of symbols, to employ the right kind of notions, and to associate with the people who know how to properly use these symbols (23). In recent years such facile and sometimes irresponsible behavior has set back our scientific and artistic development. The ones who control the communication channels and choose the standards to be emulated are advertisers and businessmen (29). In consequence, potential scientists, artists, and educators are exposed to a kind of propaganda which prepares them to be consumers rather than thinkers, innovators, and researchers. In fact, the ones who control the communication channels are the ones who control the value system of the group. This state of affairs does not enhance the spiritual and cultural values of a nation, nor does it contribute to social progress or mental health.

The merry-go-round of the technological civilization therefore takes the following shape: the intellectual elite contributes innovations which captains of industry transform into gadgets which merchants sell to the customers. In the meantime, organization man is busy streamlining universities, industry, business, and government. Since the intellectual elite has allowed the development of large-scale instruments of destruction and procedures for the control of human beings, the foremost talents in the nation should now assume the task of expelling the evil spirits they called forth. Mankind

is on the verge of destroying itself physically and enslaving itself spiritually. We cannot afford to wait for 500 years for values to evolve which suit an industrial civilization. If a human elite is to find a solution to the potential self-destructiveness of the machine age, the problem of ethics and values has to be tackled in a new way (26).

ORIGINAL LEADERS ARE NEEDED

If ours is the age of conformity and America the land of the mass culture, then we are indeed in grave danger, because if all think alike and act alike, one erroneous decision may destroy the nation. The conformist mass culture shows the same weakness as the absolute monarchy; there is no diversity of opinion which would consider alternative, though less popular, possibilities. The impasse into which the technological civilization has led us can only be broken if government, industry, business, and science have leaders capable of keeping the relative importance of human endeavors in mind. Whatever is beautiful, spiritual, and inspired has nothing to do with machines. Love, hope, faith, and all the emotions that make life worth living exist independently of technology. Although technology has improved transportation, communication, sanitation—or, in brief, comfort—it has not altered man's social or spiritual strivings. In the machine age we have not learned how to live together any better than in centuries past, and the horrors of war are with us more than ever. Technological comfort is but an adjunct to life, not its principal content. If most people who are turned out by our education mills believe that science and technology can solve problems of ethics and morality, there is something wrong in the educational system, because history belies such an assumption. As an engineering graduate of the University of California put it: "College training has been no help in furthering my enjoyment of life, very little in becoming a good citizen—and a 'must' in furthering my career" (12).

To change this deplorable state of affairs, one might begin with the education of a

small but talented group of youngsters who are spared some of the traditional brainwashing that goes on in school. We have to face the fact that education in a technological democracy often suppresses the curiosity and originality of children. In many public schools, the difference between dull and bright students is not acknowledged; and most of our public and private schools are forced to turn out a standard product (2). Actually, the younger generation is no longer encouraged to obtain a liberal education, and humanistic studies have been replaced by social studies which reflect the views and conventions of the modern organizations and bureaucracies that have been so wittily described by Parkinson (30). Here in America, this "education for citizenship," as it is sometimes called (6), means that all pupils are imbued with values which are quite befitting a lawyer or a merchant but entirely unsuited to scientists, doctors, and educators. Whatever differences may be cultivated through specific parental influence are generally diluted by the continuous bombardment of the youngsters through the media of mass communication—radio, television, movies, and the press (34).

The educational system and advertising are not the only forces that compel young people to conform. The age at marriage in the United States has fallen to an amazingly low point. In 1950-1953, half of the women who married for the first time were between 18 and 21; and the men were between 20 and 24; and for 1957, 28.8 per cent of male college students were married and living with their wives. Davis (9) believes that this is evidence of a "widespread movement toward anti-intellectualism and anti-effort in our society. The emphasis, as Remmers, Radler, Riesman, Hollingshead and other sociologists and psychologists have shown, is upon group conformity rather than individual achievement, on slackness rather than self-discipline." Early marriage prevents young people from pursuing their own development and education. Instead, they "get married when they are

still wet behind the ears. They thus adopt a conformist mode of life; circumstances have made marriage easy for them, and they have embraced it."

Of course, in a country as large as the United States there exist significant regional differences as far as conformity is concerned. If we study the birthplaces of leaders in the United States, we discover that the New England states—particularly Massachusetts and Connecticut—have contributed by far the highest proportion of scientists, directors of corporations, and persons listed in *Who's Who* (15). A comparison of Ivy League and famous eastern college graduates with the graduates of other schools indicates that the former do better financially later on, even if they made poor grades, than the latter, even if they made good grades (12). Apparently, leaders in science, business, and industry represent a particular segment of the population, carefully selected and educated in first-rate, usually private, schools and colleges. The fact that New England contributes more than its share of leaders is, aside from climatic and general considerations, owing to the presence of a homogeneous culture. Values and principles are not—as in the culture-contact areas such as New York and the far West—in a perpetual state of flux, and the social class structure is more stable. That indices of socioeconomic class (43) correlate with measurements of intelligence (25) and achievement (7) has been established beyond any doubt. Writes Keys (18), "Leaders, as distinguished from non-leaders, are on the average more intelligent, better students, from families of better socio-economic status, of more prepossessing appearance, stronger, healthier, and somewhat younger than their classmates." The same situation exists in England, where Oxford and Cambridge have for centuries concentrated on the education of an elite, and few indeed are the prominent Britishers who have not inhabited the ancient dormitories of those venerable institutions (3). Both in America and in England, the private and famous universities tend to equip sci-

entific, political, and industrial leaders with a liberal humanistic education, while the state universities and obscure colleges specialize more in vocational training.

What all this amounts to is that in practice both England and America, and to a greater extent the nations of the European continent, have schools and colleges where an elite is trained. This elite, which is composed of members of the upper strata of society, has escaped the kind of conformity that is taught in average schools. Granted that the privileged also abide by rules—those that govern their social class—it seems as if these rules are more conducive to the production of leaders. With our ever increasing population, however, we have to raise some questions: Can we leave it to Oxford, Cambridge, Harvard, Yale, and Princeton to educate the leaders of the English-speaking people? or isn't it about time that the other universities take over from these ancient institutions some of the more successful educational policies? Should we stand idly by while, in the name of democracy, the liberal professions are gradually destroyed? Should we wait until all professionals are so thoroughly organized and streamlined in their thinking that they take their orders from a local or federal boss? If we do, we pave the way not only for a dictatorship (31) but for the kind of state that was depicted in all its horrors by Huxley's *Brave New World* (17) and Orwell's *Nineteen Eighty-four* (28).

THE CREATIVELY OBSCURE ARE INDISPENSABLE

If leadership represents one kind of creativity, we should not forget that artists, artisans, and scientists who live in relative obscurity are equally important for the welfare of the nation. These men and women are not leaders—emulated, admired, and acclaimed—but contributors to and standard-bearers of our civilization. Sometimes honor and recognition come to them late, sometimes posthumously, sometimes never. We do not know who tamed the fire, who invented the wheel, or who composed the

first script. We do not know who first repositioned a broken bone or who first ligated a ruptured artery; but the men who contributed this knowledge did more for our civilization than all the people ever listed in *Who's Who*. To construct something new; to symbolically represent in form, color, or word; to generate different ideas; and to gather new knowledge characterize the activities of a creative person. Whether others perceive the new combination and acclaim it really does not matter, because, as people create, those around them are stimulated, and the seeds so planted eventually come to fruition.

Our country seems to constitute a fertile ground for the creatively obscure. Writes Cunliffe (8): "In American education there is a singular trust in not only the importance but the talent of Everyman, an astonishing willingness to push to the ultimate the doctrine of the private man in the guise of creator." Many people have come to recognize that baseball and football games, poker and bridge, iceboxes and automobiles are not enough; the human being does not wish to be fed and entertained only; no, almost any person, unless crippled by neurosis, wants to show some skill and originality. Perhaps the recent mushroom growth of do-it-yourself projects, the huge sport industry, the reawakened interest in folk music, painting, and dancing are signs of a change in climate. The 4-day work week is almost here, and within a generation the 3-day work week may become a fact. The common man will have to spend more time in leisure than at work; arts, crafts, and sports will be his domain.

What about the professional and the intellectual? Granted that sports, arts, and crafts are open to him too, there exist nonetheless other as yet unexploited possibilities: the intellectual hobby. The humanistic tradition had it that men could and should engage in intellectual hobbies. Prime ministers like Herriot of France, or Disraeli and Churchill of England, and some of our presidents such as Jefferson, Madison, John Quincy Adams, Theodore Roosevelt, Wil-

son, and Hoover were renowned authors. The Swiss psychiatrist, Forel, was in his time one of the foremost ant life experts; and businessman Schliemann was the unearther of Troy. As of recent times, however, the intellectual hobby is perhaps not as widespread in the United States as it is in Europe. In contrast to the popularity that our novelists and writers enjoy here and abroad, the American public has remained suspicious of professionals who speak well, write well, and think well. Enthusiasm for science on a technological or vocational level can be consistent with an anti-intellectual trend, and whether intellectual pursuits will regain the prominence they once possessed has to be seen; but a grass-roots movement of intellectual hobbyists could do much to improve the situation.

MODERN OVERSTIMULATION KILLS CURIOSITY

Ours is the age of overstimulation. The professional is bombarded every day through the mails with advertisements praising life insurance, stock investments, tranquilizers, and garden tools. When he takes a taxi, the radio blares; and in almost every home the television screen is lit up. Finally, on his way to and from work, colored posters brighten his dull existence. When he finally has escaped the mass media of communication, he finds on his desk more personalized invitations to attend scientific meetings, to participate in committees, and to entertain visitors. This leaves him hardly any time to work. Through the redundancy of the messages and the human contacts, certain kinds of information are repeated over and over so that the seeds of any possible original thoughts are usually smothered in their beds. The communication and transportation industries indeed have unwittingly created a milieu that promotes conformance.

Today most people would have trouble living up to Emerson's recommendation, "Whoso would be a man must be a non-conformist." And we might add that he who wishes to retain his originality must isolate himself from the hidden persuaders (29). Already earlier in this century, Ramon

y Cajal (32) and Cannon (5) suggested that an investigator divide his time between association with colleagues and solitary studies in the laboratory. When the scientist is a member of the professional feed-back circuits, he is subjected to a constant reinforcement of standard behavior, standard knowledge, and standard practice. Only when he divorces himself from these redundant influences is he able to think more critically and to consider new eventualities.

But such periodic isolation can be achieved only at a price. At a time when interdisciplinary research and teamwork are fashionable, a young man who works alone is in danger of being labeled selfish and non-adaptive; he may be accused of not getting along in a group; or he may even be called an ambulatory schizophrenic. If he is a thinker of the introverted type, he will be called "withdrawn"; and if he is a daring experimenter and adventurer, he probably will earn the title of psychopath. The average person needs and admires the creative person, but at the same time hates him because he is not restricted by a strait-jacket. Conformity is the worst enemy of creativity, and how well do artists and scientists know that! The artist deliberately controls his surroundings. He removes himself from conventional groups, lives in little fishing resorts with other painters, or in mountain villages, or wherever he will not be in contact with standard-bred behavior; and the scientist, often accused of ivory tower attitudes, isolates himself in research institutes and green-lawned campuses to avoid exposure to conventional and standard opinions (16).

The individual's defense against overstimulation consists not only of withdrawal from the source of stimulation but also of absent-minded non-participation. While years ago youngsters were eager to meet stimulating people and to seek situations where they could learn, today's generation suffers from battle fatigue. Audio-visual overstimulation makes every child familiar with the voices and faces of every important

person in the nation. In the face of such exposure, eagerness to learn has dwindled and is being replaced by a passive attitude. Not only do today's children expect to be indoctrinated, but they also expect to be sold by one or the other profession. Talent scouts who canvass the colleges and even the high schools (44) offer jobs, security, and income and sometimes promise opportunities for further education. Gone are the days of initiative, seeking, and pursuit. No wonder that in such a "secure" environment, where motivation of the pupil is weakened, the interest of the teacher slackens and the learning process suffers. The problem we have to face is how to protect a selected group of youngsters from such overstimulation. If all people are busy to discard, ignore, or reinterpret incoming stimuli, perception of real danger may suffer. This may mean the difference between survival and annihilation.

FINANCIAL SUPPORT BRINGS A FORM OF BRAIN-WASHING

While governmental agencies, philanthropic foundations, and industrial corporations allocate funds for research and education with the alleged purpose of advancing a given field, they often defeat their own purpose. That project research is more of an unemployment insurance than a scientific pursuit is by now common knowledge (1, 10). If an investigator is capable of outlining his research with the intention of completing it within a year, he must by necessity have chosen a topic that presents little if any difficulty. He then "re-searches" the known rather than to explore the unknown (35). Program research has fewer drawbacks, but it still suffers from the disease of any subsidized research: fund-givers and their administrators eventually want documentary evidence that the money was well placed. This means pressure for publicity and premature publication. Recognition of course steers the investigator away from his original path, because that which the public acclaims is usually redundant and unoriginal. In all probability, originality can exist

only when its bearer is unknown, unsponsored, and not bothered. Einstein conceived his theory of relativity while working as a clerk in a patent office of the Swiss government (42). Kodachrome was invented by two musicians in the bathroom, although it was later perfected in Eastman's huge laboratories; and none of the five earliest turbo-jet developments of Germany, Britain, and the United States was initiated within an established aircraft firm (46).

The givers and the recipients of funds become the slaves of fashion trends. Perhaps they have been bitten by the interdisciplinary bug, spending much time in meetings with professionals from other fields, learning about each other's methods but discovering little if anything themselves. After all, interdisciplinary research is an essentially educational pursuit. It has yielded few if any results (40) except in cases where the team constructs things such as airfields or atomic bombs. Groups and committees do not have original ideas. Only in one brain can information be recombined and integrated in a new way.

In other instances, funds are ear-marked for a given purpose. A drug firm, for example, might appropriate money for pharmacological research, whereupon a university researcher may slant his work in that direction. Opportunity and availability of funds induce him to choose this path, although rationally another approach might be more promising. Again, in another case, a trainee who wishes to receive a certain type of Public Health fellowship must submit a work plan in advance as if he knew which way things were going to turn out. To my knowledge, only the Rockefeller Foundation has in the past given stipends directly to a fellow without strings attached, thus circumventing his dependency upon the institution. In those days organization man had not yet invaded education, and bureaucratic practices had not as yet been introduced; but now that they are here with us to stay, we should be aware of the subtle brain-washing that is attached to their procedures.

ONLY THE EMOTIONALLY MATURE CAN RESIST

As governmental agencies, large corporations, and the communications industry have increasingly taken over the direction of American society (8), so has organization man taken control of our universities. The result has been that average education has been made available to many at the same time as top grade education for a few has been practically abolished (46). Efficient organization of curricula means that the student's day is planned and every minute is occupied, leaving little if any time for electives or just for thinking and discussion. As Lord Elton, Chief Executive Officer of Rhodes Scholarships puts it: "I regard as the great pride of Oxford its ability to present an entirely useless training in that it doesn't concentrate on technical know-how. . . . Science at Oxford is still taught mainly to make brains work better" (37).

When men begin to ask "how?" more often than "what?" the level of sophistication beings to drop (27). Organization-minded people seem to be impervious to the idea that education is there to teach the students to collect information, to distinguish between relevant and irrelevant matters, to arrive at decisions, and to communicate with their fellow men. Unwittingly, perhaps, they reduce students to the position of white-collar slaves, who are not allowed to experience, to search, or to make errors because this would constitute an inefficient utilization of time. The organization man's emphasis is not upon the student but upon the curriculum; and among the favorite topics is human organization: how to get along in a group; how to be a member of a team; how to get ahead. Science, art, and philosophy—except as to their vocational aspects—are neglected. Whether students really acquire knowledge is a subject that is sorely neglected. Instead, the main concern circles around whether or not all the aspects of a subject have been duly presented; and once the students have passed the somewhat mechanized examinations,

they are considered full-fledged professionals. Most of the individuals who graduate from institutions that are governed by organization men lack style and values which would be consistent with their occupations. A technological education apparently leaves the personality unmolded. This all-around but undeveloped potential (21) is exactly what makes an individual fit into an industrial corporation. There he does his job, waits to be promoted, and leaves decision, including those involving personal ethics, to his superiors. Even his future wife may be selected according to standards that will further his career (24). Such a man trades his personal happiness and his opportunity of self-realization for increased status.

Where does this leave the nation? Progressively more weighty decisions have to be made by both basic and applied scientists. More and more will the politicians rely upon the men of science to make decisions about food, soil conservation, energy sources, and war or peace. When these scientists, together with the statesmen, are called upon to decide whether America can survive in a nuclear war, they need more than scientific know-how. Ultimately all decisions of a social nature fall into the realm of ethics rather than technology; and when such decisions involve the destruction not only of the Western civilization but of the world, the people want to be sure that their leaders are mature people who are not fooled by gadgets and organizations (19).

Progress has become a golden calf. It is time to ask ourselves the question, "Progress for what?" Once the population has reached a standard of living which insures shelter, food, health, and recreation for all, one might profitably inquire whether the notion of progress as advocated in the past has become obsolete. To answer these and other questions, our institutions of higher learning have to become places of moral and ethical training. The physicist who discovers a new nuclear process and the engineer who, in the name of progress, develops a new weapon of destruction must be able to come to grips with the social

effects of their actions; and the director of an enterprise, in addition to deciding whether a given undertaking will be profitable for him and for the concern he represents, must answer some moral questions. Is it ethical, for example, to distribute a vaccine as yet untested to protect people against polio and run the risk of accidental deaths (22)? In order to be prepared for future responsibilities, our young men should be allowed more leisure for debate and argument, study of philosophy and history, familiarity with other cultures and languages, contact with prominent and creative people, and discussion of the biological, social, and psychological problems of our time.

Conformance in thought and feeling is a sign of emotional immaturity. Such an attitude or disposition indicates that an individual experiences less anxiety in the presence of similarities and more anxiety in the presence of differences. If this attitude is shared by many, a milieu is established in which art and science do not flourish. This, however, is deadly for a technological civilization that cannot progress without novel ideas. In present-day education, we clearly see the paradox of these two opposing trends: the demand for compliance with established theory and practice raises professional standards at a low level of competence and interferes with creative endeavors at a high level of competence. The more complex our civilization becomes, the greater will be the need for high-level competence. People capable of leadership in the various fields of human endeavor have to be educated in a special way to resist partisan indoctrination by various organizations. W. J. Brown (4) writes on this subject:

The moral is that even when we are members of an organization, our attitude to it should be one of partial detachment. We must be above it even while we are in it. We should join it in the knowledge that there we may have no abiding-place. We should be weekly tenants; not long-lease-holders. We should accept no such commitments as would prevent our leaving it when circumstances make this necessary. We should

reckon on being in almost perpetual rebellion within it. Above all, we should regard all loyalties to organization as tentative and provisional. The whole concept of 'my party, right or wrong,' 'my union, right or wrong,' 'my church, right or wrong' should be utterly alien to our thinking."

Unless we are capable of educating a few men who resist the leveling influence of the mass media of communication, avoid the vocational "how to do it" craze, and escape organization man's bureaucracy, our survival as a nation may be in question. To develop strong, emotionally mature individuals, we need a new kind of educational institution (20). If the United States population has increased by 15 million people in the last 8 years—or by about 10 per cent (38)—and if the number of college graduates in the population over the age of 25 had risen from about 4.8 per cent in 1940 to 6.0 per cent in 1950 (41), our educational institutions are no longer capable of handling the load without serious drop in performance and damage to the mental health of the students. We have to evolve a new set of values, fitted to the machine age, which will help people to orient themselves after the older forms of morality have become bankrupt. A new set of ethics would help to counteract the tendency of modern man to suffer from exceedingly low self-respect, despair, and loneliness. To tolerate education, the students have to be morally and ethically sophisticated; and the more advanced the learning, the greater the responsibility. What we have to add is not more ordinary colleges but institutions of higher learning in which a certain percentage of the college population can prepare itself to meet the challenge of science and human relations, both in an intellectual and in an emotional way (36). It is high time to concentrate on the most talented, mature, and responsible in the population if we wish to maintain our position in the society of nations. For the field of medicine, this means the creation of advanced institutes of teaching and research which would exist side-by-side with the traditional schools of medicine.

REFERENCES

1. THE AMERICAN FOUNDATION. Medical Research: A Midcentury Survey. Boston: Little, Brown, 1955.
2. BAXTER, F. C. Address given before the National Congress of Parents and Teachers, San Francisco, May 23, 1956. *San Francisco Chronicle*, May 24, 1956.
3. BOWERMAN, W. G. *Studies in Genius*. New York: Philosophical Library, 1947.
4. BROWN, W. J. *Imprisoned Ideas*. *The Spectator*, September 19, 1947.
5. CANNON, W. B. *The Way of an Investigator*. New York: Norton, 1945.
6. CONANT, J. B. *Education and Liberty*. Cambridge: Harvard University Press, 1953.
7. COX, C. M. The Early Mental Traits of Three Hundred Geniuses, p. 842 (Vol. 2 in *Genetic Studies of Genius*, edited by L. M. Terman.) Stanford: Stanford University Press, 1926.
8. CUNLIFFE, M. The Herd, the Self, and the Gulf between. *The Reporter*, October 2, 1958.
9. DAVIS, K. The Early Marriage Trend. *What's New*, No. 207, pp. 2-6. Chicago: Abbott Laboratories, 1958.
10. DODDS, H. W. Project Research. *Am. Scientist*, 42:128-30, 1954.
11. ERIKSON, E. H. *Childhood and Society*. New York: Norton, 1950.
12. HAVEMANN, E., and WEST, P. S. *They Went to College*. New York: Harcourt, Brace, 1952.
13. HAYES, S. P., JR. Some Psychological Problems of Economics. *Psychol. Bull.*, 47: 289-330, 1950.
14. HOGBEN, L. *From Cave Painting to Comic Strip*. New York: Chanticleer Press, 1949.
15. HUNTINGTON, E. *Mainsprings of Civilization*. New York: Wiley, 1945.
16. HUTCHINS, R. M. *Freedom, Education, and The Fund: Essays and Addresses, 1946-1956*. New York: Meridian Books, 1956.
17. HUXLEY, A. L. *Brave New World*. New York: Harper, 1946.
18. KEYS, N. Finding and Educating Our Leaders, pp. 64-78. In *Education and Society*. Berkeley and Los Angeles: University of California Press, 1944.
19. KUBIE, L. S. The Problem of Maturity in Psychiatric Research. *J. M. Educ.*, 28:11-27, 1953.

20. Kubic, L. S. The Pros and Cons of a New Profession: A Doctorate in Medical Psychology. *Tex. Rep. Biol. & Med.*, **12**:692-37, 1954.
21. McCLELLAND, D. C.; BALDWIN, A. L.; BRONFENBRENNER, U.; and STRODTBECK, F. L. *Talent and Society*. Princeton: Van Nostrand, 1958.
22. MARSHALL, M. S. Letter to the Editor (The Salk vaccine). *Calif. Med.*, **83**:383-86, 1955.
23. MILLS, C. W. *White Collar: The American Middle Classes*. New York: Oxford, 1951.
24. ———. *The Power Elite*. New York: Oxford, 1956.
25. MINER, J. B. *Intelligence in the United States*. New York: Springer, 1956.
26. MISSENER, A. *In Search of Man*. New York: Hawthorn Books, 1957.
27. *Nation of Advanced Plumbers? (The Reporter's Notes)*. *The Reporter*, December 12, 1957.
28. ORWELL, G. *Nineteen Eighty-Four*. New York: Harcourt, Brace, 1949.
29. PACKARD, V. *The Hidden Persuaders*. New York: McKay, 1957.
30. PARKINSON, C. N. *Parkinson's Law, and Other Studies in Administration*. Boston: Houghton Mifflin, 1957.
31. ———. *The Evolution of Political Thought*. Boston: Houghton Mifflin, 1958.
32. RAMON Y CAJAL, S. *Precepts and Counsels on Scientific Investigation*. Mountain View, California: Pacific Press Publishing Assoc., 1951.
33. RIESMAN, D. *The Lonely Crowd*. New Haven: Yale University Press, 1950.
34. ———. *Constraint and Variety in American Education*. Lincoln: University of Nebraska Press, 1956.
35. RUESCH, J. The Trouble with Psychiatric Research. *A.M.A. Arch. Neurol. Psychiat.*, **77**:93-107, 1957.
36. ———. Advanced Training for Psychiatric Teaching and Research. *J. Nerv. Ment. Dis.*, **128**: 115-24, 1959.
37. *The San Francisco Chronicle: Educator from Oxford Here Briefly*. March 31, 1958.
38. ———. October 17, 1958.
39. TREVELYAN, G. M. *Illustrated English Social History*. London: Longmans-Green, 1949.
40. Two Heads Better than One? (Editorial). *Science*, **127**:933, 1958.
41. U.S. Bureau of the Census. *Statistical Abstract of the United States: 1956*. Washington: U.S. Government Printing Office, 1956.
42. VALLENTIN, A. *The Drama of Albert Einstein*. Garden City: Doubleday, 1954.
43. WARNER, W. L.; HAVIGHURST, R. J.; and LOEB, M. B. *Who Shall Be Educated?* New York: Harper, 1944.
44. WEAVER, W. The Encouragement of Science. *Scientific American*, **199**:170-78, 1958.
45. WHORF, B. L. In: J. B. Carroll (ed.), *Language, Thought, and Reality*. Cambridge and New York: Technology Press and Wiley, 1956.
46. WHYTE, W. H., JR. *The Organization Man*. New York: Simon & Schuster, 1956.
47. WIENER, N. *The Human Use of Human Beings—Cybernetics and Society*. Boston: Houghton Mifflin, 1950.

Education of the Physician for His Role in Comprehensive Health Service*

JOHN L. CAUGHEY, JR.†

Western Reserve University, School of Medicine, Cleveland, Ohio

During the next few minutes the term "medical education" will be used frequently. It would be indiscrete to attempt a definition of the subject of this Symposium. However, it is appropriate to describe the meaning of the term as it is used in this paper.

Medical education as used here is a short way to describe all those forces which lead young people to careers in medicine, which help them to acquire the necessary knowledge, skills, and attitudes, and which continue to encourage their development throughout their professional career.

The term, medical education, therefore embraces a complex of traditions, facilities, activities, and aspirations—a complex within which all physicians are involved and which, in turn, sustains them because of their identification with it.

As human beings have done throughout the ages when dealing with powerful but intangible forces, all of us do embody our concepts of and our feelings about medical education by focus on individuals who exemplify its meaning for us. In this sense it is most fitting to have a Symposium on Medical Education in honor of John Youmans, whose medical career and devoted service to education give us a splendid personification of the best that medical education can mean in shaping the lives of young people, in advancing medical knowledge and skill, and in justifying the hope we all have for the ex-

panding influence of this vital force in our society.

One hundred years ago, medical education was closely related to the whole scope of health services in the community. By present standards, specific medical knowledge then was meager, the demands of a self-sufficient pioneer society for health care were small, and the health resources of the community were not elaborate. The future physician had few academic requirements to meet, attended a school staffed entirely by teachers whose principal occupation was the practice of medicine, and as an apprentice participated in all the activities of his preceptor. The preceptor, with other general physicians like himself, was the only formally trained medical person available, and depended for help on the sick person's family and friends.

The emergence of the biological, chemical, and physical sciences in the second half of the 19th century led thoughtful persons both within and outside the medical profession to agree that health services should have a solid foundation in these disciplines. With quite remarkable speed, in the years from 1890 to 1910, medical education was drawn, by this recognized need for a scientific foundation, to the doors of the university. By association with the university, medical education acquired ready-made paraphernalia—scholastic prerequisites, organized courses for groups of students, laboratory facilities, and a new career for teachers who, instead of earning a living in practice of medicine, could devote their time to

* This paper was read at the Symposium on Medical Education in honor of John Barlow Youmans, at Vanderbilt University School of Medicine, December 5, 1958.

† Associate Dean, School of Medicine.

scientific research when not busy with students.

It is not necessary to point out here that the association of medical education with the university has been a most fruitful one. Medical knowledge has increased fantastically beyond what was available 50 years ago. There is no one who can question the advantages which have accrued to medical education from the academic and scientific stability provided by the university.

Perhaps it is not generous to point out that the movement of medical education into the university did initiate a separation from the medical practitioners in the community. Certainly in the early years of the modern era in medicine, the preclinical teachers in medical schools were presenting to medical students subject matter which experienced clinical professors of the day had never heard about. And there would be few to deny that the progress of medical science in recent decades has been such that practicing physicians more than 15 or 20 years away from medical school would find it difficult if not impossible to understand material in biochemistry, microbiology, and pharmacology which is considered basic to present clinical teaching. To repeat, with all its advantages for the expansion of medical knowledge through research and for organized academic programs of instruction, the movement of medical education into the university did separate it from the actual health services in the community, with which it had previously been inextricably woven.

During the same period in which medical education was developing its close association with the university, a second factor emerged which also favored separation from the realities of health service in the community. This was the development of the modern hospital as a center for specialized diagnostic and therapeutic services.

Historically, the 19th-century hospital was a place of refuge for unfortunate sick people who had no home, family, or friends. The care provided in the hospital to indigent patients was comparable medically to that

provided in the home to patients who had private physicians and the means to procure necessary bedside attention. The student "walking the wards" or working in the dispensary with his teacher saw medicine not greatly different from what he would have seen if he assisted at his preceptor's visits to patients in their home, or their visits to him in his office.

The modern hospital has changed all this. All classes of citizens come to the hospital for the highly specialized diagnostic and therapeutic services which they often cannot get elsewhere. This evolution of the modern hospital has produced another basis for the separation of medical education from health services in the community, by making the kind of medicine practiced there different from that done by practitioners outside.

It was inevitable that, as scientific research in the university setting provided new knowledge, medical educators would take the lead in applying the fruits of science to the care of patients and would seek to create conditions under which they could instruct students in the most expert use of new diagnostic and therapeutic tools. The development of the great teaching hospital medical centers has been accomplished because medical education recognized the opportunity, and the need, for bringing the methods of laboratory science to the bedside for intensive investigation of clinical problems. The close identification of medical education with the teaching hospital has been most productive, both in the improvement of medical care, and also in the splendid opportunities which have been provided for education of medical students, graduate physicians and other health personnel.

The benefits from the association of medical education with the great teaching hospitals have been so obvious that there has been little tendency to look at the other side of the picture. Actually, as medical knowledge has advanced, the hospitals have become more and more specialized, providing types of care more and more separate from the kind of service rendered by a physician

in his office or the patient's home. Also, the limitations of space and the high cost of hospital operation have tended to drive out of the hospital all types of patients who could be adequately cared for in their own homes or by facilities less expensive than the general hospital.

In recent years increasing emphasis has been placed upon "full time" staff in the clinical departments. This is a laudable development, because the expertness of such men is needed if full advantage is to be taken of modern science in clinical investigation and if the fruits of such investigation are to be well taught to medical students and house staff. More and more of these valuable full-time personnel are coming to senior posts in clinical departments on the basis of intensive training in medical science and a clinical experience limited entirely to work in hospitals, often in only one department, and frequently in only one subdivision of that department. In fact, the result of these evolutionary processes in the hospital is that the clinical training of all medical students, interns, and residents in the teaching hospitals is based today on a very limited segment of the total spectrum of health services in the community; and it is not infrequently carried on under teachers who have no experience with and little interest in the provision of health services in the community outside the orbit of the medical center.

Medical education has had a dynamic history. It has evolved by taking steps to meet health needs in the community as they have been recognized. Dramatic results have been obtained by the association of medical education with the university; and by the participation of medical education in the development of the great teaching hospital medical centers. However, medical education, focusing in the university setting on academic achievement and scientific research and in the teaching hospital on clinical investigation and the training of specialized experts, has drifted away from the broad scope of health services in the community. There is every reason to believe that, unless positive steps are taken, the forces which have initi-

ated this separation will continue to operate and produce an ever greater gulf between medical education and the total scope of services in the community.

Under the circumstances it is appropriate to ask whether the time has come for medical education to recognize another need—the application of its special skills and scientific resources to research on the delivery of health services to individual patients in the community.

There are compelling reasons why medical education should accept responsibility for this task.

1. Scientific knowledge has increased so rapidly that medical school faculties in 4 years can give only part of what is important to the student. How can this vast store of information be assimilated by the practicing physician and applied in the care of patients? How can the delay between scientific discovery and effective use of new knowledge be reduced? What is the actual effect of various types of postgraduate education on the day-to-day practice of physicians? Medical education needs to know how new knowledge is being applied in practice in order to select wisely the content and methods of presentation of new material to students and graduates.

2. Concepts of health service have changed dramatically in recent years but without much study of their impact on the individual patient. Whereas a generation ago the American system was described proudly as "individual competitive practice of medicine," it is now widely recognized that comprehensive health service, for many if not all patients, must be a cooperative enterprise which involves several physicians and a variety of associated professional and technical personnel. There is at present great confusion about the roles of general physicians, medical specialists, and members of the associated health professions. The public expresses a desire for a family doctor but seems to accord special status and prestige, and the most favorable working conditions, to the physicians who avoid this type of career. Medical education must study the

relationships between different categories of physicians, and between physicians and other health personnel, if it is to help students understand their future role and if it is to help evolve concepts of practice which will enable a number of medical and other professional specialists to deliver to individual patients a kind of care which is personalized, effective, and economical.

3. In part because of the cost of modern health services, and in part because of the great increase in public information about health matters, many individuals and consumer groups outside the medical profession are asking questions about the quality of health services and the ways they can be made more efficient, more available, and more economical. Medical education probably can deal with problems in these areas more objectively than any other group with competence in health matters.

4. Medical education has an obligation to produce physicians who are equipped to meet all the types of medical need in the community. It cannot devise appropriate criteria for recruitment, selection, and education of medical students, nor adequate varieties of graduate training opportunities unless it has some defined goals related to the actual conditions under which health services will be rendered in the community. Medical education cannot afford to alienate that 90 per cent of its alumni who will practice outside the teaching hospital orbit by training them to deal only with problems they will *not* encounter in their day-to-day work and by educating them to believe in a kind of practice they will *not* be able to do under the conditions which exist in the com-

munities where they embark on their professional career.

In conclusion, then, it can be said that medical education has proved its capacity to respond to recognized needs. It produced a scientific foundation for medical practice and a great opportunity for productive research when it moved into the university; and it met the need for clinical investigation and highly specialized medical care by bringing the methods of science into the teaching hospital and creating excellent training programs there. But in part because of the move into the university and the close identification with the teaching hospital, medical education has become separated from much of the actual health service in the community outside of the medical center orbit.

Medical education is now in a position where it must recognize the present constriction of its clinical base. Because of its special skills in research, medical education can approach this problem most logically and most effectively by mobilizing resources which will enable it to undertake extensive investigation of the methods by which optimum health services can be provided to individual patients in all sorts of communities. A major effort in this area by medical education would help to bring it back into its previous close relationship with all health needs of the community. The result of such research would also provide to medical education a sound basis for fulfilling its obligation to educate physicians who are able to participate effectively in all the roles they must fill, if medical knowledge is to advance, and if the new knowledge is to be applied promptly and wisely in comprehensive health service in the community.

The First Teaching Institute of The University of Michigan Medical School

June 6, 7, 1958

DORIN L. HINERMAN, M.D.,* H. WALDO BIRD, M.D.,† AND JOHN M. WELLER, M.D.‡
The University of Michigan Medical School, Ann Arbor, Michigan

American medical education is currently engaged in a vigorous effort to reappraise its procedures and objectives. The Association of American Medical Colleges' Teaching Institutes, which were held in 1953, 1954, and 1955, dealt with the basic medical sciences, and the 1956 Institute focused attention on the need for reappraisal of approaches utilized by Admissions Committees in selecting applicants for the study of Medicine (4). Participants at the 1957 Teaching Institute on the Ecology of the Medical Student examined the effects of salient intramural and non-curricular factors on the medical student. During the 53d and 54th Annual Congresses on Medical Education and Licensure, such influences as the changing dimensions of medical knowledge (7, 12), the socioeconomic status of patients (2), and characteristics of the nation's population (8) were scrutinized. Several schools have re-examined their educational approaches and goals and revised curricula (9). Note should also be made of the re-evaluation of medical pedagogy being carried out at the University of Buffalo (10).

* Professor of Pathology and Chairman, Committee on Teaching Policies and Practices.

† Associate Professor of Psychiatry and Secretary, Committee on Teaching Policies and Practices.

‡ Associate Professor of Internal Medicine and Executive Secretary, Committee on Teaching Policies and Practices.

Other members of the Committee on Teaching Policies and Practices are John M. Sheldon, M.D., John W. Henderson, M.D., Russell T. Woodburne, Ph.D., and Marion S. DeWeese, M.D.

It is the purpose of this report to describe a Teaching Institute which was modeled after those sponsored by the Association of American Medical Colleges but which was unique in that it was conducted by the faculty of an individual school for the purpose of appraising its own educational program. In addition, the projected long-range program which grew out of the proceedings of this Institute will be outlined.

ORGANIZATION OF THE TEACHING INSTITUTE

Late in 1957 it was suggested spontaneously, at an informal gathering of medical school teachers and administrators, that a structured conference be held to consider educational problems of interest to all members of the faculty of the University of Michigan Medical School. At a subsequent meeting of the executive faculty, unanimous approval to hold a Teaching Institute was given and a Planning Committee appointed. A member of the Department of Adult Education of the University's School of Education was invited to serve as consultant in group dynamics to the Committee. The Committee compiled a list of 50 provocative questions concerning the medical school curriculum, techniques and goals of medical teaching, faculty-student relations, medical student attitudes and morale, and the responsibilities of the faculty to the community. This was circulated to all members of the faculty 3 months prior to the Teaching Institute. Each recipient indicated

his degree of interest in each issue and designated three topics he most desired to discuss. Nineteen discussion panels were organized, each composed of twelve participants with widely varied backgrounds, yet having a common interest in specific topics as indicated by responses to the questionnaire. Two weeks prior to the Institute, the panel chairman received the questionnaires of his panel members. On the morning of the first day, the chairmen were briefed as to their role.

Two hundred and twenty-five participants were present when the session opened. Addresses given by the President of the University (6) and the Dean of the Medical School (3) brought into focus the need for and the objectives of the Institute. The first guest lecturer was George E. Miller, M.D., Director of the Project in Medical Education of the University of Buffalo, whose topic was "What Are We Trying To Do?" (11). Dr. Miller stressed the need for introspection and a clear definition of teaching goals. The nineteen panels then convened in separate rooms for a 2-hour period. Robert Harnack, Ph.D., Associate Professor of Education at the University of Buffalo, spoke on "How Do We Go About Doing It?" to open the afternoon session (5). After Dr. Harnack's talk, individual panels resumed their discussions. This session was drawn to a close by Dr. Miller, who commented upon highlights of the day's activities.

The second day began with an address by John A. D. Cooper, M.D., Ph.D., Assistant Dean of Northwestern University Medical School. In his paper "Educational Patterns in Medicine" (1), Dr. Cooper summarized trends developing in efforts to meet present-day problems and challenges. The final discussion period for the panels then took place, after which all participants reconvened to hear and discuss summaries of the deliberations of each panel. Observations reflected the great enthusiasm of those taking part and disclosed a consensus that reappraisal of medical education at the University of Michigan should become an integral part of the faculty's activities.

SUMMARY OF THE PANEL REPORTS

The reports of the panel meetings of the Teaching Institute covered a wide range of topics. Under the headings of "Curriculum," "Faculty," and "Students," the most frequently expressed opinions and recommendations are summarized:

Curriculum

General.—Undesirably repetitious and extraneous material should be eliminated from the Medical School curriculum, thereby allowing more free time and an opportunity to study elective subjects. Wider use of the research method, including statistical evaluation, and a greater use of library materials was advocated. Examination techniques should be re-evaluated, and decreased emphasis should be placed on examinations and grades.

Premedical.—Because of the length of time required to obtain a medical education, the premedical curriculum, through correlation with the medical curriculum, might be shortened. Counseling by the medical faculty might be extended to the premedical student.

Preclinical.—Considerable feeling was expressed for an optimal degree of correlation between basic sciences and an increased amount of clinical experience during the first 2 years.

Clinical.—Didactic third-year lectures should be reduced and replaced by direct clinical teaching. A greater correlation of basic sciences with the clinical program was recommended. The need for more patient material was recognized. Students should have only minimal responsibility for performance of purely mechanical laboratory tests.

Faculty

Increased recognition of the primary importance of the teaching function of faculty members was urged. Assistance in improving teaching ability should be made available, and training should be offered in the effective use of audiovisual aids. There

should be some shift in the responsibility for clinical teaching from the resident and junior staff level to the senior staff level, with an increased participation of the senior staff in all teaching functions. Attention was called to the great need for freer communication, both within and between departments. Outlines of all courses should be circulated and additional opportunities created for interdepartmental discussions of teaching programs.

Students

A program of active recruitment of superior candidates for the study of Medicine was proposed. An increased number of students might be attracted by providing high schools and colleges with complete information concerning admission requirements, by holding an annual open house at the Medical School for prospective students, by increasing the number of scholarship and loan funds, by apprising premedical students of the existence of such funds, and by reducing premedical requirements. A larger number of high caliber out-of-state students should be admitted. The morale of medical students needed to be improved with further inculcation of proper scientific attitudes. Medical students should be discouraged from excessive outside work because of the concomitant educational loss. Students should be treated as mature adults and colleagues of the faculty. The need for improved communications between faculty and students was emphasized.

FUTURE PLANS FOR IMPLEMENTATION

Great enthusiasm was displayed by the unexpectedly large number of participants at the Institute. Issues which were raised continued to be favorite subjects of conversation long afterward. Many departmental meetings were called to reappraise objectives and modify teaching procedures. In addition, a specific program for evaluation of medical education evolved as a direct outgrowth of the Institute. This has been organized in response to the participants'

strong recommendations that such reappraisal become an integral part of the Medical School's activities. Responsibility for this continuing program has been invested in the Committee on Teaching Policies and Practices. Shortly after the Institute, this new committee was directed by the Dean to analyze the data gathered during the Teaching Institute and to develop a program of action.

The Committee on Teaching Policies and Practices has reviewed the transactions of the Institute and has identified areas in which reappraisal is clearly indicated. The conclusion has been reached that evaluation in these areas should be undertaken with the assistance of sub-committees whose findings and recommendations would be coordinated and integrated by the Committee on Teaching Policies and Practices, then presented to the faculty for implementation. The Committee believes that by these means it can become a mobilizing force to enable the faculty to develop a more effective program of medical education at the University of Michigan Medical School.

REFERENCES

1. COOPER, J. A. D. Educational Patterns in Medicine. *Univ. Mich. M. Bull.*, **24**:316-24, 1958.
2. DARLEY, W. Undergraduate Medical Education and the Changing Status of Patients. *J.A.M.A.*, **167**:182-86, 1958.
3. FURSTENBERG, A. C. History and Purpose of the Teaching Institute. *Univ. Mich. M. Bull.*, **24**:295-96, 1958.
4. GEE, H. H., and COWLES, J. T. (eds.). The Appraisal of Applicants to Medical Schools. Report of the Fourth Teaching Institute Association of American Medical Colleges. *J. M. Educ.*, **32**:1-228, 1957.
5. HARNACK, R. S. How Do We Go About Doing It? *Univ. Mich. M. Bull.*, **24**:306-11, 1958.
6. HATCHER, H. Address of Welcome. *Univ. Mich. M. Bull.*, **24**:293-94, 1958.
7. HUSSEY, H. H. Changing Dimensions of Medical Knowledge, Their Implications for Medical Education, Research, and Practice. *J.A.M.A.*, **167**:40-47, 1958.

8. KIRK, D. Population Characteristics and Trends and Their Implications in Medical Education. *J.A.M.A.*, **167**:26-30, 1958.
9. TURNER, E. L.; WIGGINS, W. S.; SHEPHERD, G. R.; HINMAN, J.; and TIPNER, A. Medical Education in the United States and Canada. Fifty-seventh Annual Report on Medical Education in the United States and Canada by the Council on Medical Education and Hospitals of the American Medical Association. *J.A.M.A.*, **165**: 1393-1457, 1957.
10. MILLER, G. E. Adventure in Pedagogy. *J.A.M.A.*, **162**:1448-50, 1956.
11. ———. What Are We Trying to Do? *Univ. Mich. M. Bull.*, **24**:297-303, 1958.
12. WOOD, W. B., JR. The Underlying Cause of Unrest in University Medicine. *J.A.M.A.*, **164**:548-50, 1957.

The Critical Response to *Gray's Anatomy* (A Centennial Comment)

FRED ERISMAN*

Should a selection ever be made of the one book most likely to carry the name of the medical book, *Gray's Anatomy* is certain to be a major contender. This book, now in its centennial year, having undergone twenty-six American editions and thirty-two British editions, has been purchased, pored over, and virtually committed to memory by generation after generation of medical students.

In 1958, *Gray's Anatomy* has been described as "excellent in . . . latest editions" (5). And its reception when it first appeared? While opinion was generally strongly in its favor, a few dissenting voices were heard.

Henry Gray, F.R.S., F.R.C.S., the author of the text, was, at the time of the book's appearance, demonstrator of anatomy, curator of the museum, and lecturer on anatomy at St. George's Hospital, London. The first edition of the text appeared in October, 1858, and was followed by the second edition in 1860. Following Gray's death in 1861, of smallpox contracted while treating a nephew, the editing of the book was turned over to various noted anatomists and physicians. The current editor of the American edition is Dr. Charles M. Goss, Professor of Anatomy at Louisiana State University (3).

The first British edition of *Gray* appeared under the title of *Anatomy, Descriptive and Surgical*, and was illustrated with "363 large Woodcuts, from Original Drawings by H. V. Carter, M.D. . . . Dissections jointly by the Author and Dr. Carter" (6). The edition contained 782 pages and was an immediate success.

* First-year medical student, School of Medicine, Duke University, Durham, North Carolina.

Even the *Lancet*, the traditionally staid pillar of British medicine, went so far as to say this:

We are bound to say that no treatise that has issued from the press for a great number of years is more calculated than the present one to "furnish the student and practitioner with an accurate view of the anatomy of the human body . . ." [6].

As if this were insufficient praise, the editors went on to state:

As a full . . . and advanced treatise on anatomy . . . scientifically excellent, and adapted to all the wants of the student, we are not acquainted with any work in any language which can take equal rank with the one before us [6].

Dr. Carter's illustrations accounted in great part for the praise received by the text, with the *Lancet* saying, ". . . the illustrations . . . are perfect" (6).

The *British Medical Journal*, reviewing the book a full month later than the *Lancet*, was no less effusive in its praise:

Mr. Gray's *Anatomy* is far superior to all other treatises on anatomy, descriptive and surgical. . . . The woodcuts, from the drawings of Dr. Carter . . . are excellent. . . . We cannot avoid congratulating St. George's Hospital on the production of such a book . . . a book which must take its place as the manual of *Anatomy, Descriptive and Surgical* [7].

Despite the glowing reception given *Gray*, a few cautioning points were made. The *Lancet* ignored any errors in the book, specifically, and launched a full three-column-inch warning to the medical student against looking upon the book as a means with which "to dispense with the . . . actual dis-

section of the human body, and the study of disease at the bedside" (6).

In much the same vein, the *British Medical Journal* solemnly stated that the "student who entirely depends upon such a book as this for his knowledge is deceiving himself" (7).

On the whole, however, the reception given the text in England was a favorable one. Not entirely so the Americans' greeting to Henry Gray.

The American edition of *Gray* appeared in the summer of 1859, an octavo volume of 754 pages. The *American Journal of Medical Sciences* mentioned some typographical errors, overlooked them "as inseparable from the appearance of a first edition," and proceeded to cite the text as "an admirable and complete textbook for the student, and a useful work of reference for the practitioner" (1).

War clouds were gathering ominously in 1859, yet even the South concurred in the praise given to the book. The *Charleston Medical Journal and Review*, publishing two months after its northern relatives, devoted five and one-half pages to its review. The entire book was well received, with particular notice being given to Gray's treatment of the brain. "The blood vessels and lymphatics are well described, while the brain, that mountain to medical students, is reduced to a mere mole-hill by the capital style in which it is explained and illustrated" (2).

The Charlestonians were somewhat dissatisfied with the section on the relations of the deep and superficial fasciae of the perineum, saying that Gray, like many other anatomists, tended to undervalue the area. Praise, though, was not withheld, and the South seemed to agree with the summation that Gray "has done well—better in our humble opinion than any of his predecessors" (2).

Even without these glowing reviews, *Gray* would have been assured instant success, had the tongue-in-cheek tradition existed in 1859, as it does in 1959, that to be banned in Boston is the mark of literary

acceptance. The *Boston Medical and Surgical Journal* made grudging noises of approval for the illustrations, but at the same time editorially threw up its hands at the over-all aspects of the book.

In a review extending through two numbers of the *Journal*, *Gray* was systematically anatomized, scrutinized, thrown to the floor, and trod upon. The reviewer, known mercifully only as "H.," began in the grand style, outlining what one should expect in an anatomy text:

The definition of true anatomy might also be given in a literal reading of the ancient medal which represented an empty skull surmounted by a butterfly, and bore the motto, "Life in Death" [4].

He then stated flatly: "We regret to say that these expectations are not realized." Some slight pleasure was expressed over the illustrations, but the book was spoken of as "superficial and incomplete, and too often careless and erroneous" (4).

Inconsistencies were pointed out, typographical errors seized upon and devoured with all the gusto of an ape finding a particularly toothsome flake of dandruff, the instructions for dissection were favored with a jaundiced glance, and, crowning insult of all, a charge of plagiarism was leveled at Gray.

Concluding his examination, H. commented:

Our object has been merely to exhibit the fact that *Gray's Anatomy* is not a desirable textbook, or a safe and complete guide for the practitioner. There already exist text-books of far higher range, wider scope, more complete detail, more accurate descriptions . . . it supercedes none of its predecessors and its size, pretence, and ambitious belongings are only calculated to mislead the student and beguile him into the purchase of an inferior and unreliable work [4].

With one hundred years of publication behind it, *Gray's Anatomy* appears to have weathered the occasional flurries of criticism and justified the fame it won its author in 1858. The volume has grown in size from

782 pages to 1,604; in weight from three pounds, four ounces, to six pounds, four ounces. And, while many equally good texts of anatomy have appeared in the past century, *Gray's* consistent popularity would seem to justify the statement that "the way Dr. Gray looked at the human body simply cannot be beaten" (8).

REFERENCES

1. BENNETT, J. H. Review of *Gray's Anatomy*. *Am. J. M. Sc.*, **38**:206, 1859.
2. BRUNS, J. D. Review of *Gray's Anatomy*. *Charleston M. J. & Rev.*, **14**:632-38, 1859.
3. GOSS, C. M. (ed.). *Gray's Anatomy*, p. 3. 26th ed. Philadelphia: Lea & Febiger.
4. "H." Review of *Gray's Anatomy*. *Boston M. & S. J.*, **60**:489-522, 1859.
5. MARKEE, J. E. "Notice to First Year Students," p. 5. Duke University School of Medicine, 1958. (Mimeographed.)
6. WAKLEY, T. Review of *Gray's Anatomy*. *Lancet*, **2**:282-83, 1858.
7. WYNTER, A. Review of *Gray's Anatomy*. *Brit. M. J.*, **1**:949, 1858.
8. ANON. 100 Gray Years. *Time*, **72**:50, 1958.

A Course in Pathology To Promote Interest in the Specialty

ALFRED A. ANGRIST, M.D.*

Department of Pathology, Albert Einstein College of Medicine, Yeshiva University, New York 61, N.Y.

INTRODUCTION

Pathology has been superseded as the subject of primary interest for the medical student. In a recent survey of medical graduates, only 2 per cent listed pathology as "most preferred," and 11 per cent named this field as "least liked" (2). These are the lowest and highest figures, respectively, for any specialty. Martineau and Brines (6) concluded in a recent survey that "present teaching objectives in sophomore pathology do not consider the students' interests, abilities or attitudes, and that there is no effort to interest the students in a career in pathology." In the past, pathology was a most attractive field, in spite of the low financial reward then prevailing. Yet today, when pathology is one of the highest paid specialties in medicine (3), there exists a serious shortage of qualified pathologists in hospital and academic positions. Pathologists trained abroad are filling the depleted ranks, and our dependence upon them will continue until more of our own young men can be attracted to this specialty.

Of all the factors contributing to the lack of interest in pathology, the most important is the transformation of its status from what formerly was a rewarding investigative daily effort to a paralytic routine service. The existing shortage has established a vicious cycle to perpetuate and intensify this shortcoming. In contrast, facilities and opportunities for research have increased in other fields of medicine, without this frustrating toll of urgent routine, to entice candidates formerly drawn to pathology.

* Professor and Chairman, Dept. of Pathology.

Only by the return of the opportunity for stimulating research can pathology again become attractive to the capable student, the number of qualified pathologists be increased, and the present situation be corrected fundamentally and permanently. Transplanting productive research workers from other specialties to be in charge of departments of pathology will not restore the practicing pathologist's previous foothold for original research. The resulting grant research effort is usually divorced from the daily practice of pathology. This temporizing solution increases the service burden for the remaining trained pathologists, the major difficulty besetting the specialty. This arrangement intensifies the dichotomy of research and routine, instead of integrating the two. In having its research mimic fields of pure science to the extent of neglecting its own very essence, morphology, pathology excludes its unique and fundamental source of strength. If the specialty is to maintain its identity and its vitality in adding to our understanding of disease and to medical education, many more qualified pathologists are needed whose training includes a synthesis of modern research experience, using adaptable newer physical and chemical methods, with mastery of morbid anatomy.

The expedient of priming academic departments with research workers from other fields has another important shortcoming: it relegates stimulating teaching of morbid anatomy to a secondary role. This is hardly likely to make the mainstay of the specialty, anatomic pathology, attractive to the student.

At the Albert Einstein College of Medicine a deliberate attempt has been made to enlist the active interest of the students in pathology. The course is based on programs observed at a number of medical colleges in the United States during a survey made possible by a Travel Fellowship of the Rockefeller Foundation. The curriculum incorporates many of the recommendations of the "Symposium on Increasing the Research Potential in Pathology" (8). The course emphasizes "the important role of the pathologist in the study of disease and the management of the patient." It accepts and even stresses the fact that the static appraisal of structural alteration is not the chief goal of pathology and that "the study of tissues by the conventional means is no longer sufficient alone for the investigation of the dynamics of the pathologic process."

DESCRIPTION OF COURSE OF STUDY

What is unusual in the teaching program is the number and variety of teaching techniques used and the stress on the dynamic role of morphology in disease and investigation. The specific teaching methods include the following:

- The complete autopsy case with functional correlation, as a teaching instrument and examination exercise;

- Stress on gross pathology by introducing intermediate ranges of magnification from the naked eye to the microscope;

- A large, varied microscopic slide collection with pertinent descriptive and clinical data;

- Experiments pertinent to clinical medicine and to areas of current morphological research;

- Student seminars on experiments and history of specific entities in pathology;

- Demonstrations of special techniques, classical experiments, and current research;

- Student attendance at the general and special hospital clinical pathological conferences and daily "organ recitals";

- Lectures with limited objectives, question and answer periods and motion pictures on special topics;

- Provision for the continuing exposure of the student to pathology during his medical school career.

Sophomore pathology has 320 hours; 90 lectures and 200 laboratory hours, twelve seminars, eighteen panel discussions, and question and answer periods. The class is divided into groups of eight, and each group is assigned to a separate laboratory supervised by qualified visiting pathologists, thus enlarging our staff and enriching our fresh gross teaching material.

One third of laboratory time is devoted to gross pathology. The student is oriented to the study of *gross* morphology by the application of instruments to yield a gradual increase in magnification. Each student is encouraged to use the hand lens, a low-power illuminated hand magnifier, and the stereoscopic dissecting microscope on all gross material. The student groups with their instructors study the fresh autopsy and current surgical material in the classroom with frozen sections available. Fixed gross and mounted museum specimens and relevant kodachrome slides are demonstrated in each laboratory unit.

Important in evolving a dynamic concept and appreciation of three-dimensional fine structure of tissue is the study of thin, small mounts of classical lesions. These are prepared with a commercial meat-slicer and sealed between sheets of thin, transparent plastic. In addition, sections of organs on paper, after the method of Gough and Wentworth (5), are demonstrated and correlated with the roentgenogram. These thin specimens are ideal for study with hand lens and low-power stereoscope by both incident and transmitted illumination. Appropriate microscopic slides of these same specimens are provided.

The *autopsy* is exploited as a means of integration (1) and to introduce the student to clinical medicine. The teaching technique of McManus (7), utilizing fixed whole autopsy cases with clinical abstracts, protocols, and pertinent microscopic sections, occupies one third of the time devoted to gross pathology. Such whole case autopsy material is also employed for practical examinations. The student is asked to list the final anatomical pathological diagnoses, discuss

the major lesion and the functional and clinical correlations. A group of students with an instructor is assigned in rotation to the mortuary to observe and analyze six autopsies. Students are encouraged to attend the daily "organ recital" sessions and the formal hospital clinical pathological conferences, held during free periods. These sessions are not presented as a guessing game, but as a teaching exercise, with active participation by members of the basic science and the clinical faculty. The student is thus exposed early and continuously to mature analytical pathology in practice.

A collection of 500 microscopic slides is divided by topics into units for each laboratory session. For each slide the student is given a clinical history, the autopsy findings, and, when possible, the significant gross material in the form of thin slices. Of these, only half are assigned, but the majority of students diligently study all the sections. The class set includes cytological touch preparations of fresh lymph nodes, tumors, inflammatory lesions, smears of effusions, and vaginal smears stained by the Papanicolaou and by Feulgen methods, and slides with newer histochemical and classical special stains. To orient the student, a detailed description of each slide is provided, and selected fields of each of the assigned slides are demonstrated by kodachrome projection prior to classroom study. This increases the student's efficiency in the study of slide material in the laboratory and avoids disheartening frustration. Unknown slides, with history and gross findings, are distributed every few weeks as exercises in description and diagnosis.

Every student participates in either an experimental or historical study. Each historical review covers a single topic of pathology, such as Bright's disease, lymphoma, tuberculosis, or endocarditis. Groups rotate to see demonstrations which are used extensively and parallel subject matter. The experimental and demonstration programs are made feasible by having several full-time research workers assume the full responsibility of supervising and directing the stu-

dent experiments and preparing and presenting the special demonstrations. Each experiment and historical survey is presented by the students to the whole class as a seminar. Questions are many, and discussion is spirited. Invited faculty members from basic science and clinical departments actively participate in the discussion. The written reports are bound in book form for future classes.

A student volunteers to join a group for a particular experiment, selected in the context of a clinical problem. Students in each group review the literature, help formulate the experimental design, perform the surgical and other procedures, and study the slides. The slides are prepared by departmental technicians, with the students free to observe. The experiments involve common procedures, such as the healing of fractured bone, ligation of a ureter, a common bile duct or a coronary artery or the transplantation of tumor. Utilizing modern techniques such as histochemical stains, radioautography, and electron microscopy, under guidance and direction of the research staff, these experiments are provocative both for the students and staff. This orientation of the experimental program to morphology links classical pathology to modern advances in basic sciences.

Demonstrations of classical experiments, like that of Cohnheim on inflammation, are placed in a modern setting, e.g., by the use of the hamster cheek pouch and the transparent ear chamber. The effects of cortisone, alloxan changes in the pancreas, tissue cultures of Hodgkin's lymph nodes, tumors induced by azo dyes, experimental valvular vegetations, Masugi nephritis, injection studies of the coronary and mesenteric circulation, and decompression air embolism have been presented. Histochemical procedures as well as routine stains are shown. Demonstrations include the application of ultraviolet absorption, fluorescence, polarized light, phase contrast, and electron microscopy. All these help establish pathology as a vital developing subject and link morphology to function.

Otherwise, the curriculum selects the more common entities. Limited correlation is attempted with Microbiology and Diagnostic Methods (clinical pathology plus physical diagnosis) by the presentation of subject matter in parallel sequence. Lectures encompass limited areas of pathology and do not attempt to cover any subject completely. Lecture outlines or abstracts are distributed so that the student may read them in advance, consult references, and thus spare himself distracting verbatim note-taking. Seminars, panel discussions, and selected motion pictures cover additional material, and question and answer periods help to clarify problems.

DISCUSSION

Several different teaching activities are going on simultaneously. This eliminates the tedious monotony of repetitiously uniform daily classroom performance. The diversified schedule eliminates a static atmosphere, adds individuality to the instruction, offers an opportunity for mature selective interest, and introduces a postgraduate academic tenor to the course.

The study of the intermediate ranges of magnification has proved to be a gratifying experience for the student. He learns that pathology is not limited to crude macroscopic observation, with a sudden jump to an unrelated world of flat-field microscopy. Seeing the relationship of one order of magnification to others, the student obtains an informative visual image in depth of the architectural form of tissue structure. Graded magnification yields an appreciation of spatial relation, promotes thinking at the macroscopic level, and emphasizes morphology. Thus, gross pathology obtains due emphasis and acquires significance. The student does not lose sight of the forest by concentrating on the veins and cells of the leaf. It places microscopy in its proper relative position in pathology.

Observation, analysis, and technique of description are stressed; drawings are not required. Terminology of pathology is presented as the precise language of medicine.

Classification is presented as a basis for the understanding of the graded transitions in tissue reaction and the interrelations of lesions and diseases, not as a stereotyped memory exercise.

It is an error for the department of pathology to abandon the student after the second year. Pathologists should continue to exert a stimulating influence during the clinical years. This can be done by formal courses but is more readily achieved by the conferences held with the separate specialties and the daily "organ recital" and weekly autopsy review. Thus pathology is made pertinent to all fields of medicine.

A fellowship program (4) can be another means of continued influence. The department offers student fellowships and clerkships during the summer, for which there have been more applicants than can be accommodated. Such a fellowship program has proved successful in identifying the undergraduate with pathology (4). It is planned to have some students work full-time for a full year after completing sophomore pathology, as is being done at the University of Rochester. The proposal to offer a 6-year program leading to a combined M.D. and a Ph.D. degree in experimental pathology, which has been so successful at Western Reserve, has been approved by our graduate division.

The program attempts to nurture the original interest of the student and maintain the relation of the avid pupil and the stimulating teacher. A course devoting so much time to experimentation, demonstration, and other activities is not designed to obtain a good showing on the National Board Examination. Rather, it attempts to equip the student to seek out and apply the detailed knowledge of pathology for its specific clinical applications throughout his medical career. It should better prepare him to understand, keep abreast and make effective use of the rapid advances in medicine. Thus, pathology is found to be important to the student for his future in medicine; this enhances its appeal.

SUMMARY

Pathology has lost its former fascination for students and is not attracting qualified candidates. The increasing shortage poses an immediate threat to its research potential and its ultimate survival as a specialty.

The sophomore course is the first contact of the medical student with pathology. A dynamic sophomore teaching program can be crucial in identifying him with the subject. Such an initial favorable impression, followed by a continuing exposure to stimulating applied pathology for the remainder of his medical school career, can do much to attract the student and to promote his choice of pathology as a specialty and academic pathology as a career.

A course in sophomore pathology is described which attempts to increase its appeal to the student by offering him a rich diversified experience. The student obtains a better appreciation of morphology by including the study of intermediate magnifications ranging from the naked eye through simple lenses to the compound and the electron microscope.

Experiments and demonstrations broaden the scope of the subject and link pathology to the basic sciences. The applications of morphology to the functional aspects of clinical medicine and research are stressed.

The program limits the formal presenta-

tion of systematic factual pathology; but it permits greater emphasis on principles and methods with general utility. The aim is to prepare the student to seek, evaluate, and apply the information of the past and to stimulate him to keep pace with the future advances in pathology and medicine on his own.

REFERENCES

1. ANGRIST, A. Effective Use of the Autopsy in Medical Education, Its Role in Correlation and Integration. *J.A.M.A.*, **161**:303-9, 1956.
2. CALAHAN, D.; COLLETTE, P.; and HILMAR, N. A. Career Interests and Expectations of U.S. Medical Students. *J. M. Educ.*, **32**:560, 1957.
3. CROATMAN, W. Income of Specialties. *Medical Economics*, **34**:115-24, 1957.
4. FENNINGER, L. D. The Rochester Student Fellowship Program. *J. M. Educ.*, **33**:207-10, 1958.
5. GOUGH, J., and WENTWORTH, J. D. Thin Sections of Entire Organs on Paper. *J. Roy. Microscop. Soc.*, **69**:231, 1949.
6. MARTINEAU, P. C., and BRINES, D. A. A Consideration of Histopathology in Teaching of Sophomore Pathology: Results of a Questionnaire. *J. M. Educ.*, **33**:528-31, 1958.
7. MCMANUS, J. F. A. Pathology—Present and Future. *J. M. Educ.*, **28**:35, 1953.
8. Symposium on Increasing the Research Potential in Pathology. *J. Lab. Investigation*, **3**:377-450, 1954.

An Experimental Approach to the Teaching of Human Ecology*

LEON R. LEZER, M.D., M.P.H.
University of Vermont College of Medicine

THE PENDULUM SWINGS

The history of medicine throughout the centuries is one of emphasis on extremes. From the earliest days of the miasma theory of disease through established germ origin of disease to the present concept of multiple causation, there has been concern for environment in which man struggles to maintain a symbiotic relationship. Whether concern for environmental forces was based primarily on superstitious beliefs because of ignorance stemming from limited range of observation, or whether concern for environmental forces is based on technically accurate understanding of the environment in which man lives, the basis for these concerns subscribes to the pursuit of human ecology for those who would be declared proficient in the understanding of man.

In the seventeenth and eighteenth centuries great strides in the advancement of technology, with concomitant emphasis on quantitative factors, occurred. Without this concentration on technological advance, achievements in medical science might have been delayed. An unfortunate circumstance in the history of medicine was the almost complete rejection of quantitative emphasis in favor of qualitative emphasis during the nineteenth century. Mesmerism flourished in France. Mary Baker Eddy lived at a time when her concepts of Christian Science could be promoted. It was an era of romanticism. Medicine became closely identified as a branch of philosophy.

* Paper read by title at the sixty-ninth annual meeting of the Association of American Medical Colleges, Philadelphia, Pennsylvania, October, 1958.

During the twentieth century, technological and scientific advances have removed and/or brought under control many of the agents of infectious and communicable disease which threatened man's survival. By mid-century, the results of a safe neonatal period and infancy as well as prolonged lifespan produce a climate in which attention logically has turned to problems of longevity.

Demography has become the core of problems in the medical as well as in the economic and social fields. Greater population growth and movement coupled with a proportionate increase of the very young, as well as longevity, have forced a focus upon total environmental factors affecting the human organism.

CHANGING CONCEPTS OF MEDICINE

There is a growing awareness of the need to call upon the social and behavioral sciences to comprehend fully the impact of environmental factors affecting man's health and therefore his relationship to society. Increasingly, attention is being focused upon the natural history of disease—and upon the natural history of health. This cannot be complete without sociological definition and interpretation. The plea at mid-century is to include the assessment of the status of man in his environment without excluding the strictly biological approach. The theory of multiple causation of disease cannot be fully sustained without full exploration of social as well as clinical epidemiology. Increasing exposure to long-term illness, degenerative disease, mental illness, and acci-

dents makes the time opportune for effective holistic approach to medical practice and medical research.

Human ecology, then, must become a part of the deliberate approach to the practice of medicine. The teaching of human ecology can serve as one of the tools in medical education for creating an awareness on the part of the future physician of the importance of fully understanding his patient, the biological unit in which he lives, and the environmental forces acting upon both. In effect, it may serve to focus attention upon the patient and his family as was the custom of "the old family physician." With the highest regard and respect for the much eulogized family physician of the past, one must remember that the lack of tools at his command necessitated long periods of time with the patient and his family. Some mechanism must be employed in order again to achieve these values of relationship between physician and patient without loss of expediency through the use of rapid means of diagnosis, therapy, and delegation of responsibility to myriads of personnel in the modern structure of medical care.

CURRICULUM

The time is undoubtedly approaching when medical school curricula will generally undergo radical change. Many are rapidly realizing that the body of knowledge which could be presented as factual detail is rapidly outstripping the time available. Undergraduate medical education will inevitably be forced into teaching broad principles of structure and function and of health and disease; with these constituting a framework of reference, the medical student will emerge for the pursuit of graduate study in hospitals.

Just as basic scientists were added to medical schools not so many years ago, so will new personnel be added to medical schools in the immediate years ahead. Reference is made to the social sciences in particular. Their function will be that of teachers, not just administrative aides or theorists conducting interesting studies in

social science and its relation to medical education and medical care.

Changes in organization of departments of preventive medicine and in the establishment of new departments of preventive medicine throughout medical schools have reflected participation of social scientists as teachers. The old tools of preventive medicine still apply but are being utilized in the newer problems which face the physician emerging into twentieth-century practice. Such full-time faculty members as a sociologist, a health educator, and a medical social worker combine efforts with physicians in departments of preventive medicine. Such organization serves as a very natural area for the teaching of human ecology.

Francis Peabody summed up the need for this multidisciplinary approach when he said: "What is spoken of as a clinical picture is not just a photograph of a man in bed; it is an impressionistic painting of the patient surrounded by his home, his work, his relations, his joys, sorrows, hopes, and fears."¹

EXPERIMENT AT THE UNIVERSITY OF VERMONT

For some time prior to coming to the University of Vermont, the author had an opportunity to work closely with graduates of medical schools in two large metropolitan hospitals. During this time, considerable thought had been given to the need for some mechanism in the medical school curriculum which would provide the student with broader understanding of his patient as a member of society, as well as an intricate understanding of the disease process which overtakes the patient. The development of a department of preventive medicine at the University of Vermont provided the opportunity to explore possibilities. Through the teaching of human ecology with availability of a sociologist, a health educator, and a medical social worker on the faculty, points of view in sociology, health education, and social service could be coupled with those of physicians in teaching this subject matter.

¹ F. Peabody, *Care of the Patient*, p. 15. Cambridge: Harvard University Press, 1927.

WHEN

The first year of medicine was chosen for several reasons.

1. It seemed important to begin the teaching of preventive medicine as such early in the curriculum and to continue contact with students throughout the four years. Hopefully, such continuity would lead to student understanding of the need to fuse preventive philosophy and techniques with curative procedure.

2. Since human ecology would naturally stress the importance of understanding the function of the individual as a whole in relation to environmental forces, it seemed important to attempt this while the student is of necessity studying details of structure and function. This timing would serve to preclude development of attention only to the parts in structure and function and would inculcate an attitude from the early days of medical school of the need to understand the whole in relation to external forces and conditions as well as the relationship of the parts to the whole.

3. Since the student at Vermont concentrates heavily in anatomy and since the cadaver is the physical body that housed the individual, it seemed clear that utilization of the cadaver history might possibly leave some lasting effect on the student as to the importance of the intangibles as well as the tangibles in medicine.

4. Some time and effort had already been given to the establishment of a pilot program in combining liberal education with medical education at Vermont.²

There was some concern that use of the cadaver history might be emotionally traumatic to the medical student. Psychiatrically, there was valid criticism concerning such a possibility. It did seem reasonable that a student might be emotionally traumatized when reading something of the life of an individual whose body he was systematically, but nevertheless, "destroying." The first year, therefore, only half the class had avail-

able to them the life-histories of the cadavers. Since that first year, however, the entire class has had cadaver histories for teaching purposes in human ecology.

The life-history of an individual presents a complete profile from which retrospective conclusions may be drawn. Not unlike interpretation of the signs observed by the pathologist at autopsy are the signs of events in an individual's life which may serve as useful indications of differences in life-patterns. There are also indications of points at which the physician could have served as instigator of change in social forces as well as in physiological ones. In other words, the life-history of the cadaver might be plotted as is the biological gradient for a particular disease.

METHODOLOGY

Because of the problem of curriculum time noted above, and with the desire to combine ecology with anatomy, the co-operation of the department of anatomy was obtained.³ Time was arranged for students to attend a series of seven orientation lectures in human ecology followed by seminars in which the life-history of the cadaver was discussed. Since the first year (1955), human ecology is taught in alternate weeks with psychobiology. The Dean's Conference time has been allocated for this purpose. Following the orientation lectures given by the sociologist, the students meet in seminar for two 2-hour periods on alternate weeks. During these seminar periods, the cadaver history obtained by the medical social worker the previous summer is discussed with emphasis on social, cultural, and economic factors in the life of the individual as they related to medical care problems. Participating in this seminar are the physician (including the professor of anatomy and/or his associates), the medical sociologist, the health educator, and the medical social worker. During the current year (1958) a public health nurse, who is also full-time on

² George A. Wolf, Jr., *Integration of the Last Year of College and the First Year of Medical School*, *J. M. Educ.*, 32:573-79, August, 1957.

³ Chester A. Newhall, M.D., Chairman and Professor of Anatomy.

the faculty in preventive medicine, has been added to the group.

Periodically throughout the year additional lectures are given according to need as revealed through seminar discussions. Again the anatomy department has co-operated fully in providing seven additional lecture hours throughout the year for this purpose.

EVALUATION

Evaluation of the effectiveness of this course prior to the present third-year class's becoming Seniors will not be feasible until these students are assigned to a home-care program which is also administered in the department of preventive medicine. Full evaluation cannot take place until these students are observed in their internships and subsequently in practice. Plans are now made for carrying out such an evaluation procedure through internship and residency and into practice for those whom it will be possible to follow. For human ecology to be effective, it must serve as a demonstration of the importance of fusion of curative and preventive medicine. Differences in the student's attitude and approach to comprehensive medicine during his third and fourth years should ensue. Studies carried on by Weinstein⁴ at Albany Medical Center are available which give some index of student attitudes prior to the teaching of this course. These data may be compared with attitudes of those students who have gone through preventive medicine teaching from the first year through the fourth year.

FACULTY

Human ecology also provides an opportunity for personnel who are relatively new

⁴ Morris Weinstein, Ph.D., Albany Medical Center, Albany, New York.

to medical schools to utilize their particular skills most effectively. It gives interested observers an opportunity to weigh the functions of paramedical personnel in a medical education setting. Although the department of preventive medicine at the University of Vermont has a full complement of paramedical personnel, we are in mutual agreement that this situation provides an opportunity to study ourselves, as it were, in order not only to determine the contributions that such professional personnel may make but also to determine the need for such personnel in medical education today.

SUMMARY

This paper has been a brief report on an experiment in the teaching of human ecology. A background of evolutionary change in medical education and medical care has served as a basis for teaching human ecology with a multidisciplinary approach. Thus far the experiment merits continuation. There have been no emotionally traumatic problems as a result of the use of the cadaver. The cadaver history, on the other hand, has served, it seems, to enliven the students' interest in the importance of understanding the patient, his family, and the social forces acting upon both patient and physician in the comprehensive approach to medical care. Full evaluation of such teaching must wait within the medical school for observations during the clinical years, and still further for complete evaluation, until reports may be obtained from internship, residency, and practice experience.

It is fully expected that participating professional personnel will have clearly defined roles in the whole structure of medical education.

Collegiate Training of Doctors of Medicine

JOHN R. SAMPEY, Ph.D.*
Furman University, Greenville, South Carolina

Numerous studies have been made on the academic backgrounds of Ph.D.'s in the physical sciences. Liberal arts colleges have been found to play a leading role in the undergraduate training of the nation's scientific manpower.¹ No similar investigation has been made into the collegiate training of the guardians of the nation's health.

As an approach to the problem, the writer tabulated the colleges in which the graduates of three different types of medical schools took their premedical training. Catalogs of a state-supported medical school, a privately endowed medical school, and a medical school operated as a part of a denominationally affiliated institution were checked to determine where the graduates for the years 1942-57 took their premedical training. In brief, it was found that the state medical school drew most heavily upon state-supported institutions, the privately endowed upon similar nonprofit institutions, and the denominational school looked to church-related institutions for most of its students. A number of other interesting relations were apparent from this approach.

The state medical school selected for this study graduated 978 students during the 16-year period. Sixty-seven per cent of these had their undergraduate training in state-supported colleges and universities, 27 per cent were from denominational colleges, and 4.6 per cent from privately endowed institutions. While the students came from 61 different colleges and universities, 85 per cent of them were from 10 colleges within the

same state as that in which the medical school was located.

The denominationally controlled medical school had 605 graduates during the years 1942-57, with 72 per cent having their premedical training in church-related institutions. Nineteen per cent came from state schools, and only 8 per cent came from privately endowed colleges. While this medical school took students from 115 different colleges, over half (52 per cent) of its M.D. graduates received their premedical education in schools affiliated with this same denomination.

The privately endowed medical school had 809 graduates coming from 131 different schools. Sixty-two per cent were from privately endowed institutions (47 per cent had been undergraduates in its own university), 24 per cent had been admitted from state schools, and 13 per cent from denominational colleges.

In order to test how much the picture changed when other state-controlled medical schools were selected, a check was made on the 1957 graduates in 5 other state medical schools. The data are summarized in Table 1.

Medical school A of Table 1 was in the same state as the privately endowed medical school studied for the period 1942-47, and school D was in the same state as the denominational school studied for the same period.

Turning to liberal arts colleges, we find these institutions have been a rich source of premedical material in all three types of medical schools. In this study the term "liberal arts" is applied to those institutions

* Department of Chemistry.

¹ Knapp and Goodrich, *Origins of American Scientists*. Chicago: University of Chicago Press, 1953.

which support no professional schools of engineering, medicine, pharmacy, and other applied sciences, and which grant no Ph.D. degree in the physical sciences. The seventh edition (1953) of the *College Blue Book* has been used to determine the liberal arts status of the colleges.

State-operated medical schools have drawn most heavily upon liberal arts colleges for premedical training. During the period 1942-57 one state medical school had 478, or 48 per cent of its graduates, taking their undergraduate work in liberal arts institutions. Only 26 liberal arts colleges accounted for this excellent showing, with just 4 colleges contributing over one-third (35 per cent) of the 978 M.D.'s granted.

The other 5 state medical schools of Table 1 took students from 69 liberal arts colleges, and 140, or 35 per cent of the M.D.'s granted, received their undergraduate training in liberal arts colleges. Ten per cent of the 403 graduates came from just 4 liberal arts institutions.

One-fourth of the graduates in medicine in both the denominationally controlled medical school and the privately endowed one received undergraduate schooling in liberal arts colleges. Of the 606 M.D.'s from the church-related school, 154 came from 62 liberal arts colleges, while 215 of 809 in the privately endowed medical school took their premedical work in 65 liberal arts colleges.

Four liberal arts colleges accounted for 7 per cent of the total graduates in the church-related school, and 6 per cent of the privately endowed medical school.

What light does this study throw on the 25,000 students enrolled in the medical schools of the nation? The *College Blue Book* lists 45 per cent of these as enrolled in state

TABLE 1
PREMEDICAL BACKGROUNDS IN 5 STATE
MEDICAL SCHOOLS

INST.	No. of M.D.'s GRANTED	TYPES OF SCHOOLS WHERE PREMEDICAL WORK WAS TAKEN (PER CENT)		
		State	Denomina- tional	Privately endowed
A	100	54	23	23
B	91	58	20	22
C	77	42	23	35
D	68	75	25	..
E	67	74	20	6

medical schools, 35 per cent in privately endowed schools, and 18 per cent in denominationally controlled schools. This study cannot answer where the students in each of these three types of medical schools took their premedical education, but it does stimulate some intriguing speculations. It is hoped that some day a more definitive study on a national scale by the American Medical Association, the National Science Foundation, or some private foundation will provide the answers.

MEDICAL EDUCATION FORUM

Editorial

MEDICAL EDUCATION, AN AMBASSADOR OF INTERNATIONAL GOOD WILL

On the market place of international good will the humanitarian aspects of medical science present a currency with an exceedingly high rate of exchange. Against the background of wars and rumors of wars, whose measure of achievement is related to potentials of human destruction, it is a welcome relief to feel the warmth of man's kindness in terms of medical care. A growing sense of appreciation that man is his brother's keeper has stimulated the genesis of numerous international health missions within the past few months and years. In a recent appearance before a congressional committee, Dr. Gunnar Gundersen, president of the American Medical Association, epitomized this situation in his statement: "There is a growing recognition that medicine, with its resources and influence fully mobilized, can perhaps do more for world peace than the billions of dollars being poured into armaments."

The direct care of the sick and injured has an immediate and therefore more dramatic effect on both participants and observers. In the emotional surcharge of such activities, we are prone to forget that the foundation for such efforts and the long-range continuation of these humanitarian missions are dependent fundamentally on the education of the medical scientist. Thus medical education actually becomes an even more important potential for improving world health and increasing international good will than medical care itself. That this fact is being assigned increasing importance in the minds of medical educators is evidenced by the development of numerous programs of affiliation between schools of medicine in this country and those abroad.

India, the world's most heavily populated democracy, is struggling to meet the growing demands for increased numbers of medical scientists. Mr. M. C. Chagla, Ambassador of India to the United States, stated in the January 25, 1959, issue of the *New York Times*:

What is going on in India is of tremendous importance to America and to everyone who is interested in the democratic way of life. We are seeking to prove to the world that it is not necessary to scrap democratic institutions, to extinguish the spirit of freedom, to undermine the dignity of man in order to bring economic prosperity to a country. There are many doubters and critics. It is glibly said that democracy and freedom are the exotic food that only a highly developed society can afford. We are engaged in a mighty struggle to rebut and disprove this view.

A recent visit to India presented evidence on every hand that medical education held a high priority in state and national interest. Equally evident were the difficulties facing a realization of these worthy goals. Herein lies an opportunity for American medical education to work with their fellow Indian educators in order to assure that nation's ultimate

success in this valiant struggle, a struggle which is not local but world-wide in its implications.

In the initiation of a freer educational communication between India and the United States a relatively minor technicality, an "academic tariff" so to speak, should be resolved. This relates to a hesitance on the part of each of the above nations to recognize certain of the other's educational standards. Recently, in an attempt to rectify the matter of the graduate medical education of foreign medical students in the United States, there was established the Educational Council for Foreign Medical Graduates. Although this program, which is still in its infancy, may not be perfect, it is a step in the right direction. Unfortunately, the failure of India formally to recognize graduate medical education in this country deters her students from coming to American institutions. By the same token, American educators are not academically accredited in India.

A mature and objective approach to this problem would seem to be an early meeting of the Indian and American authorities responsible for accreditation and a resolution of this undesirable technicality in the dispassionate atmosphere of academic good will. India and the United States have much to gain in eliminating this minor obstacle to their growing international co-operation and good will.

MELVIN A. CASBERG, M.D.
University of Texas

Reports

A COURSE IN PROBLEMS OF MEDICAL PRACTICE

THOMAS J. BROOKS, JR.,* AND LOUIS F. RITTEMEYER, JR.†
University of Mississippi School of Medicine

In recent years attention has been called (1, 2) to the obvious desirability of including in the medical curriculum some instruction in the "non-scientific" aspects of the practice of the art. A course designed to make a positive contribution to the solution of this problem was described in 1954 by Weiss (2), of the University of Colorado School of Medicine.

With the completion of a new medical faculty and the development of a four-year curriculum at the University of Mississippi in 1955 it was decided to develop in this institution a course that would emphasize the ethical, economic, and legal aspects of medical practice. It appeared that such a course should logically be presented to seniors for the reason that these students are nearing graduation and are beginning to think seriously of entering medical practice. In the junior year, students are principally occupied with work on the hospital wards, and attendance at regularly scheduled sessions was more likely to be irregular.

The course content has been changed somewhat during the three years it has been presented. The basic purpose, however, has not been altered. The presentations are designed to offer information on the professional, ethical, business, and legal aspects of the practice of medicine. No effort is made to provide a detailed and systematic review of these fields, but it is implied by their inclusion in the curriculum that they are of sufficient importance to demand of the student (and later the doctor) his attention and concern. Throughout the senior year one hour each week is devoted to this course. The schedule for the academic year 1958-59 is presented in the accompanying scheme. Lecturers include faculty members of the Department of Preventive Medicine, of other departments of the School of Medicine, and non-faculty members whose knowledge of particular subjects qualifies them to speak on their respective topics.

Medicine—the Profession

1. Memberships, Journals, Societies and Conventions
John B. Howell, Jr., M.D.
Canton, Mississippi
2. Press Relationships
Mrs. Maurine Twiss, Director of Public Information
University Medical Center
3. Hospital Relationships
David B. Wilson, M.D., Director
University Hospital

* Professor and Chairman, Department of Preventive Medicine and Assistant Dean.

† Associate Professor of Preventive Medicine and Director, Section on General Practice.

4. Consultations
Herbert G. Langford, M.D.
Assistant Professor of Medicine
5. Grievance Committees
James R. Cavett, Jr., M.D., Chairman
Grievance Committee of the Central Medical Society
Jackson, Mississippi

Medicine—the Vocation

1. Religion and Medicine
T. J. Brooks, Jr., M.D., Chairman
Department of Preventive Medicine
2. Relationships with the Clergy
Dr. Roy C. Clark, Pastor
Capitol Street Methodist Church
Jackson, Mississippi
3. Relationships with the Clergy
Rt. Rev. Msgr. Josiah G. Chatham, Pastor
St. Richard's Catholic Church
Jackson, Mississippi
4. A Doctor's Philosophy
D. S. Pankratz, M.D., Director
University Medical Center
5. Medical Ethics
Guy Thompson Vise, M.D., President
Mississippi State Medical Association
6. The Art and Ethics of Patient Care
Louis F. Rittelmeyer, Jr., M.D.
Associate Professor of Preventive Medicine
7. Attitude of the Physician toward Death
J. R. Snaveley, M.D., Chairman
Department of Medicine
8. The Physician's Community Responsibility
Curtis P. Artz, M.D.
Associate Professor of Surgery

Medicine—the Business

1. Group or Solo Practice
A. V. Beacham, M.D.
Magnolia, Mississippi
2. Equipping and Opening an Office
W. M. Dabney, M.D.
Crystal Springs, Mississippi
3. Office Management
R. J. Moorhead, M.D.
Yazoo City, Mississippi
4. Principles of Office Accounting
Mr. Frank Zimmerman, Comptroller
University Medical Center
5. Tax Problems
Mr. Frank Zimmerman, Comptroller
University Medical Center
6. The Cost of Medical Care
Mr. Rowland B. Kennedy, Executive Secretary
Mississippi State Medical Association

7. Meeting the Cost of Medical Care
Mr. Rowland B. Kennedy, Executive Secretary
Mississippi State Medical Association

Medicine and the Law

1. Medical Legislation
Wm. E. Lotterhos, M.D.
Jackson, Mississippi
2. Medical Jurisprudence (8 lectures)
Mr. John E. Stone
Legal Counsel, Mississippi State Tax Commission
Immediate Past President, Mississippi State Bar Association
3. The Physician as a Citizen
Verner S. Holmes, M.D.
Member, The Board of Trustees of State Institutions of Higher Learning
4. Drug Addiction
Mr. Ernest M. Gentry
District Supervisor, U.S. Bureau of Narcotics
Dallas, Texas

General

1. The University Medical Center—a Part of the University of Mississippi
Doctor J. D. Williams, Chancellor
University of Mississippi

EVALUATION

This effort to introduce instruction in practical—and frequently quite basic—aspects of the physician's life into the senior year of medical school has been watched with interest by the entire faculty. The consensus is that it occupies an important place in the education of doctors of medicine.

Students have generally expressed satisfaction with the course. Some have felt that more emphasis was needed on economics and less on legal matters; others have taken the opposite view. It will be several years after graduation before these opinions can be quantitated. Favorable reactions to the material presented are, however, worth noting.

It can be stated in summary that a lecture course in the professional, ethical, business, and legal aspects of the practice of medicine is considered a valuable part of the education of the physician. It occupies only a small amount of time and offers senior students ample information to justify its inclusion in the medical curriculum.

REFERENCES

1. Congress of Medical Education, News Digest. *J. M. Educ.*, 29:48-49, 1954.
2. WEISS, G. A Course Preparing Medical Students for the Practice of Medicine. *J. M. Educ.*, 30:137-47, 1955.

A STATEMENT OF THE OBJECTIVES OF THE ASSOCIATION OF AMERICAN MEDICAL COLLEGES

The Association of American Medical Colleges was first organized in 1876.

The broad objectives of the Association of American Medical Colleges are the improvement and advancement of medical education by developing increasingly effective means of selecting the most able students for the study of medicine, by encouraging experimentation in curriculum development and medical teaching methods, by supporting experimentation, studies and programs aimed at improving the ability of students to learn and teachers to teach, by supporting efforts to improve the hospital internship and residency as educational experiences, by supporting efforts to improve and broaden the influence of continuing medical education, by developing the knowledge and leadership necessary to provide for the long-range progress and stability of medical education and by creating and maintaining effective avenues of communication between medical educators and between medical educators and the American public.

All of the Association's programs have been developed to support the above objectives. Briefly, these are:

1. The gathering, collation and analysis of information about medical students, medical faculties and medical education through the conduct of research and special studies.
2. The conduct of institutes and workshops that deal with the teaching of medicine and the financing and administration of medical education.
3. The encouragement of regional meetings of affiliated hospital administrators and medical faculties.
4. The holding of an annual meeting, at which time medical school and university administrators and faculty, the administrators of affiliated hospitals, representatives of federal and state governments, representatives of medical and related professions and all others interested in medical education are brought together to exchange views.
5. The production and distribution of curriculum-integrated medical teaching films.
6. Medical school visitations and counseling.
7. Participation with the Council on Medical Education and Hospitals of the American Medical Association in the accreditation of the medical schools of the United States and possessions and the medical schools of Canada.
8. The direction of the Medical College Admissions Test through the Educational Testing Service of Princeton, New Jersey.
9. Cooperation with voluntary and governmental agencies that are engaged in programs important to medical education.
10. The publication of the *Journal of Medical Education*, the reports of the Teaching Institutes, the handbook "Admission Requirements of American Medical Colleges," the annual Directory of the Association of American Medical Colleges, a periodic news letter "The Medical Mentor" and an occasional special publication or report that may be of particular importance to medical education.

The institutional membership of the Association is comprised of the accredited medical schools of the United States and its possessions, the American University of Beirut and the Mayo Foundation for Medical Education and Research, Graduate School of the University of Minnesota. The affiliate institutional membership in the Association comprises the accredited medical schools of Canada and the University of the Philippines. Individual

membership in the Association is open to medical school and university faculty members and administrators, the administrators and staffs of affiliated hospitals, and any other individuals who wish to be active in matters relating to medical education. Emeritus membership is for those faculty, deans and other administrative officers of medical schools and universities who have demonstrated unusual capacity and interest in dealing with the problems and in contributing to the progress of medical education and who, because of retirement, are no longer active. Sustaining members may be any person, corporation, or agency that has demonstrated over a period of years a serious interest in medical education and wishes to make annual contributions to the financial support of the Association. During an open business meeting of the Association, affiliate, individual, emeritus, and sustaining members may have the privilege of the floor.

Decisions regarding the policy and business affairs of the Association are the collective responsibility of the deans of the schools that comprise the institutional membership. Much of this responsibility is discharged through an Executive Council, consisting of a president, president-elect, immediate past president, vice president, secretary, treasurer and six members elected to terms of three years. The Executive Council, in turn, employs an Executive Director to oversee and carry out the Association's general program. Standing and ad hoc committees and the review of committee reports before open hearings play an important part in the conduct of Association affairs.

The financial support of the Association is derived from dues paid by the institutional, affiliate institutional, individual and sustaining membership, Journal subscriptions and advertising and grants for special purposes. The research staff, much of the research of the Association, the Association's research work by the Educational Testing Service and the administration of the Medical College Admissions Test are in part financed by fees charged to students taking this test.

THE NEED FOR PHYSICIANS

INTRODUCTION

The A.A.M.C. is concerned with the present status of medical education and with the future status of medical education. Any consideration of the future of medical education raises the problem of the supply of physicians and the estimates that ten to twenty-five more schools will need to graduate 2000 more M.D.'s per year.

In 1956, the A.A.M.C. adopted a forthright statement on the needs for the development of new 4-year medical schools. In 1957, after further study of the supply problem, the desirability of developing schools in the basic medical sciences was adopted by A.A.M.C.

The attitude of the A.M.A. was enunciated in the address before House of Delegates by President Dr. Gunnar Gundersen on December 2, 1958.

In view of the continuing discussions on the problem of physician supply we are reprinting an excerpt from Pres. Gundersen's address as well as the statements of the A.A.M.C.

STATEMENT ON THE FUTURE NEED FOR PHYSICIANS*

The changing nature of our industrial civilization, the increasing population, and the expanding knowledge revealed by research have and will continue to have a profound effect on

* Adopted by the Association of American Medical Colleges, 1956.

our educational programs. It is a responsibility of the universities and of the professions to recognize and meet the needs of society. There is no area in which this obligation is greater than in the field of the health sciences.

Within the next decade, the health care of the American people, based on greater knowledge through research, will require increasing numbers of all types of personnel, including physicians. Further, many more young men and women will be seeking higher education and training in one of the health professions.

In the 10-year period (1945-46 to 1955-56) since the end of World War II the number of medical schools has increased from 77 to 82, the number of entering freshmen from 6,060 to 7,686, and the number of graduates from 5,655 to 6,485. Two new medical schools admitted a freshmen class for the first time in the fall of 1956. At least one other school is in process of formation and will admit its first class in 1959.

Although the Association of American Medical Colleges is proud of this record of the medical schools in responding to the needs of the post-war world, it also believes that more remains to be done. Medical education should be expanded further without impairment in the high quality which has been carefully built up in the United States since 1910. It is possible that some existing schools can, with new facilities and larger facilities, accept additional students, but the need will not be met completely in this manner. The larger contribution in number of students will come, as it has in the past, by the establishment of new schools.

On the other hand, many schools have already expanded their enrollment without increase or improvement of physical plant. The 84th Congress authorized construction of research facilities, but as was pointed out by the President, this met only a part of the need to maintain the present quality of teaching for the present number of students.

The Association of American Medical Colleges urges its member institutions to survey their potentialities and capacities in the light of the future need for health personnel, and urges universities in large urban centers, now without a medical school, to give serious consideration to the establishment of one.

The latent period between the determination to form a medical school and service of the graduates to the people is 8-14 years; 2-4 years to plan the program, construct the buildings, and secure a faculty; 4 years for medical education; and 2-6 years for hospital training as an intern and resident. Hence, if we are to meet the problem, it should be borne in mind that plans made in 1956 are not for next year or the year after, but for the needs of the nation in 1964-1970.

A program of expansion will require large sums of money, both for capital expenditures and for operating expense. The Association of American Medical Colleges is dedicated to the preservation of joint and coordinated support of medical education from private and government sources and believes the American people are willing and able to back ventures which will mean better health and a happier life.

STATEMENT ON SCHOOLS OFFERING TWO-YEAR EDUCATIONAL PROGRAM*

At its 1956 annual meeting, the Association of American Medical Colleges issued a statement to the effect that this country should increase its output of physicians by increasing the number of its medical schools.

As things stand now, after making allowance for the four new schools in development, it appears that between 1957 and 1964 our annual number of medical graduates will increase by

* Adopted by the Association of American Medical Colleges, 1957.

approximately 450-7400. In the opinion of the Association, exploration of means beyond additional 4-year schools for further increases for the period after 1964 is necessary.

A recent survey revealed that, owing to attrition during the freshman and sophomore years, plus the fact that some schools can accommodate more clinical than preclinical students, the junior classes of our 4-year schools have facilities for between 300 and 400 additional students. If this number of students were progressing from new 2-year medical programs fully integrated, on the one hand, with the undergraduate college program, and, on the other hand, with existing 4-year schools, our annual number of medical graduates would be increased significantly.

If these new programs were initiated in a sound university environment, many would undoubtedly evolve in due time into first-rate 4-year schools, as evidenced by the events of recent years. At the close of World War II, there were eight schools in this country offering the first 2 years of the 4-year medical course. Graduates of these schools were easily absorbed into the third-year classes of our 4-year schools. At the present time all but three of these 2-year schools have changed or are changing to 4-year programs.

In view of these facts and in view of the lower capital and operating expense of 2-year programs, the Association of American Medical Colleges encourages universities with strong leadership and necessary resources to establish new programs in medical education which would offer the first 2 years of the 4-year medical course.

EXCERPT*

Gunnar Gundersen

I should like to call your attention to the new policy statement concerning the development of additional facilities for medical education, which is contained in the report of the Council on Medical Education and Hospitals. This is a positive statement which clarifies our position and emphasizes the constructive viewpoint. When you adopt that statement you will make it clear that American medicine fully recognizes the needs being brought about by the increasing population, social and economic trends, the changing dimensions of medical science, and new methods of organizing medical services. It urges existing medical schools to give serious consideration to the possibility of increasing their enrollments and developing new facilities. It also encourages the creation of new four-year medical schools and two-year basic science programs by universities which can provide the proper setting.

I hope that this new policy statement will receive the enthusiastic support of the entire profession and that it will be made widely known to correct past misinterpretations of our viewpoint concerning the supply of physicians.

* Excerpt from address of Pres. Dr. Gunnar Gundersen before the House of Delegates of the A.M.A., Dec. 2, 1958.

ABSTRACTS FROM THE WORLD OF MEDICAL EDUCATION

Medizinische Erfahrungen im Euphratgebiet (Medical Experiences in the Euphrates Region). DR. GERS-OSSENBECK. Deutsche medizinische Wochenschrift, pp. 2261-65 (December 12), 1958.

In 1956, during a joint German-American excavation expedition into the Upper Euphrates region (eastern Asia Minor), the author was in charge of the medical care of the archeological staff as well as of the native workers and their families. This is a report on his observations of climatic and nutritional conditions, the habits of the native population, and the diseases prevailing in that area. The natives are Kurds, living under primitive conditions with insufficient food and water supply in a subtropical climate, surrounded by the jagged, steep bare rocks of the Anti-Taurus Mountains. Malaria was the disease most frequently encountered, and hardly any of the natives had escaped it. *Resochin* therapy proved to be very successful with malaria patients. The author also had to deal often with feverish intestinal infections of unusual virulence. He attributes the many cases of infections by amoeba and typhus bacilli to the Kurds' drinking water from stagnant pools and eating vegetables almost exclusively. Tuberculosis seemed to be widespread but was often kept secret by the diseased, since affliction with T.B. means exclusion from social intercourse and even from work communities. It was found that frambesia is a most dangerous endemic disease among the Kurds of that region and in some cases produces total muscular atrophy. Tropical tumors and dermatitis were numerous, the latter especially among children. Treatment with penicillin

and terramycin powder brought amazing results within 10-14 days, even in the most serious cases. A striking feature of the health situation was the great number of natives afflicted by eye diseases, mostly purulent conjunctivitis and trachoma. Of special interest also are the author's experiences with snake and scorpion bites and their treatment. Dr. Baumann was surprised to find among the Kurds—a "nature" people with strong nerves—relatively more stomach ailments than among the inhabitants of Western countries. He sees one causative factor in excessive smoking of native tobacco (a daily rate of 40-60 cigarettes is nothing unusual there), for which assumption he found ample evidence among his patients; another cause might lie in the eating habits of the Kurds of that region, who take only two meals a day and each year undergo a month-long ritual fast period during which only one heavy meal is eaten late at night.

Presentation of the John Howland Medal and Award of the American Pediatric Society to Dr. Irvine McQuarrie. A.M.A. Journal of Diseases of Children, No. 5, pp. 559-66 (November), 1958.

At the sixty-eighth annual meeting of the American Pediatric Society (May 8, 1958, Atlantic City) this Award and Medal was presented to Dr. McQuarrie by Dr. Arild E. Hansen. In his introductory speech, Dr. Hansen recalls Dr. McQuarrie's career from mining engineer to eminent medical scientist and his many and various scientific accomplishments. Summing up the philosophy of the man whom he likes to call "Irvine the Activator," the speaker explains that Dr.

McQuarrie, who even as a student gave evidence of a "Pandora-like curiosity," believes that "man is especially endowed with abilities to detect new things and is morally obligated to learn to understand life." To this end, the "experiments of Nature" must be studied, supplying Nature herself the "clues." In his acceptance speech, meant to be "something in the way of an explanation" of his pupils' and younger associates' predilection for full-time teaching and research careers, Dr. McQuarrie, developing further his philosophy, dwells on the attributes of character and the external influences necessary to make a true scientist. Although genuine scholars seem to be "born" and not "made," he says, the successful teacher does his part when he discovers the potential scholar and then provides adequate incentive for him to develop his own natural capacities through his own enterprise. The most propitious attributes of character in the potential young scholar are "intellectual curiosity, idealism, inspirability, discernment, imaginativeness, zeal for learning and willingness to work, perseverance, optimism, imperturbability and magnanimity." Taking up the facetious simile, made by Dr. Hansen, of the old miner from the West searching for "streaks of gold," he compares the responsible head of a clinical department with the old prospector, who becomes truly the "lucky prospector" if he discovers a candidate possessed of such qualities of character. Recollecting his own experiences as a student, he emphasizes his conviction that friendly examples, involving teachers and their pupils, are most potent influences which determine later attitudes. From the "immense personal benefit" derived from such happy relationships stems his desire to share experiences with close associates in academic life. "Giving them positive encouragement to follow scholarly pursuits while maintaining broad clinical interests and proper balance between the different facets of the academic career" has been for him an extremely rewarding policy. Team research, Dr. McQuarrie feels, can be as rewarding as individual experimental

work (his own "favorite diversion") when there is proper understanding between the parties. But independent thinking and investigation must also be greatly encouraged. The head of a university department, genuinely interested in both the progress of scientific knowledge and the unhampered growth of younger colleagues, "learns to derive most of his personal satisfaction in life from observing their achievement." An important factor in creating such a relationship is also a "friendly and sympathetic attitude" toward their domestic, financial, and other "extracurricular problems." "It is not unnatural," according to Dr. McQuarrie, for a "proud and well-wishing chief" to praise from time to time the meritorious performances of his younger colleagues, "whether these are achievement in teaching, clinical investigative work or presentation of exciting new scientific reports." But he must also avoid development of jealousies and selfishness among them. He should always exercise "extreme patience" and, above all, avoid the use of sarcasm, abhorred by sensitive persons "as a viperous idea-blocking invention of 'Old Nick.'"

Postgraduate Medical Teaching in England. CLAUDE HAMILTON-TURNER, M.D., *The Medical Press* (London), pp. 833-36 (Sept. 3), 1958.

Postgraduate medical teaching is not an innovation, but there is today a much wider recognition of the need for it and a vast increase of activities in this field. In Britain, two postwar developments have been of the greatest importance especially for the prospective family doctor or general practitioner: the compulsory pre-registration intern year, and the "trainee practitioner scheme." These institutions illustrate today's awareness of the need for the trained doctor to start practicing his profession under supervision and the need for practice in addition to knowledge. For the graduate seeking a career as specialist or consultant, the Medical Act of 1950 and the N.H.S. Act have been important milestones. Under the N.H.S., hospital appointments have been

reviewed, and an attempt has been made to correlate the number of "trainee-specialist" posts with anticipated requirements. It is still, as before the war, in undergraduate teaching hospitals and medical schools where the majority of future specialists receive their postgraduate training. The number of "trainee-specialist" posts in non-teaching hospitals has been strictly limited, but in some cases they have been linked with a similar post in a teaching hospital, so that the trainee can obtain part of his training in the academic atmosphere. In certain specialties, such as radiology, new posts have been created specifically which afford paid employment while training. Postgraduate training in Britain is governed by competition at every stage of the "trainee-specialist's" career, and the prospective general practitioner also meets competition whenever he applies for a "trainee-assistant" post or for a practice. A useful innovation is seen in the institution at every university in England of a "Postgraduate Dean" who facilitates communication between regions on matters affecting postgraduate training (under the N.H.S. Act the country was divided into hospital regions, each region being centered on a university with medical school). Greater opportunities for both specialists and G.P.'s to increase their knowledge have been provided in the last decade by means of courses, conferences, and symposia, and the number of teaching hospitals is steadily augmenting. The continuing education of the G.P. under the N.H.S. is financed by the Ministry of Health, which has requested the universities to provide facilities. Refresher courses are being arranged in increasing numbers all over the country. "Extended courses" (half-day sessions once a week for several weeks) and weekend courses facilitate attendance for the busy family doctor. In his conclusions, the author (Assistant Director of the British Postgraduate Medical Federation) defends himself against a possible charge of seeing postgraduate training in England under the N.H.S. "through rose-colored glasses," by pointing out that he is not

unaware of its problems, especially that concerning the "Senior Registrar" but that the N.H.S. is being developed primarily for the benefit of the community, not that of the medical profession. But he emphasizes the fact that the high standards of British medicine and the ethics of the medical profession have been preserved, and he considers postgraduate education an essential factor in maintaining their pre-eminence.

Science Teaching Improvement Program. J. R. MAYOR. *Science*, 128:1262-65 (Nov. 21), 1958.

Three years ago, a grant from the Carnegie Corporation enabled the American Association for the Advancement of Science to initiate its Teaching Improvement Program (STIP). Since then, a very substantial change has developed in what concerns teaching science and the education of science teachers. Although these manifest themselves mostly in attitudes and interest, they may be considered forerunners of changes in practice. Evidence for this assumption is already seen by the author (Director of STIP) in the great expansion of summer and academic-year institutes for teachers; the well-organized efforts to prepare up-to-date course material in physics and mathematics; the increasing number of universities that are offering special science and mathematics courses for teachers; the numerous surveys of science curricula and teaching materials; and the increasing willingness of scientists to devote time and thought to the problems of education below the collegiate level. Although no attempt could be made to find out how much credit for these changes can be given to the AAAS and STIP, all the efforts and resources of the association in carrying out the program have been directed toward these ends. The work done through STIP, described in detail in this report, has mainly been concerned with improving the quality of teaching in science and mathematics.

Le Professeur, ce méconnu (The Forgotten Professor). EDOUARD DESJARDINS.

L'Union Médicale du Canada (Montreal), pp. 1471-1474 (Dec.), 1958.

In recent years public opinion has been alerted to the problems of university education which have become "endemic" everywhere in North America, in the United States as well as in Canada. The American universities, research institutes, education committees, etc., have all made inquiries into the matter, have analyzed the situation and offered suggestions designed to remedy it. The actual crisis arose principally from student overpopulation, but, while university and students could mobilize propaganda in their favor, the university professor has not succeeded in galvanizing public opinion. Indeed, his plight has been overlooked, although it is he who "transmits the spark, distributes the wealth of culture, sows the ideas and gives orientation to the work." Being thus the most important piece in the educational process, improvement of his lot is a vital need for any living university. Academic institutions depend today more than ever on a large, qualified, competent, inspiring and *well-remunerated* staff. There is already a great shortage of instructors on the elementary- and high-school level, and the same fate is threatening the universities. This is especially true concerning professors of medical schools, who, as the author points out, often consent to teach for a meager fee or even none at all. The clause "without salary nor contract" included in the Hippocratic Oath, he says, has indeed been valid for centuries in the case of medical teachers, but such policy is impracticable in the twentieth century. Medical teaching, which involves perhaps more devotion and sacrifices than any other academic field, may well be compared to the ministry, but its ministers are becoming more and more rare. It is, therefore, urgent that the problems of the medical instructor be solved by granting him the financial recognition which his services merit and which must be sufficient to attract to the teaching career the elite of the young physicians.

A British View of an American Hospital.

J. F. STOKES, M.D. The New England Journal of Medicine, No. 2, pp. 69-71 (Jan. 8), 1959.

Dr. Stokes, physician at the University College Hospital, London, resumes in this paper the impressions gained during his two "short and most enjoyable weeks" as a visiting physician to the Massachusetts General Hospital, in May, 1958. What impressed him first of all was the readiness of the senior staff in special departments to find time in their busy day to devote to discussion, although he found that they get through more work in 24 hours than their University College Hospital counterparts. Hospital staffs in the United States start a little earlier and finish much later than in England. He also found that residents in American hospitals, much more than their British counterparts, devote themselves solely to medicine and spend what little spare time they have reading medical literature, having thus a greater command of current publications. They also show a keener competitive spirit, and their discussions are much livelier than in England, where combative arguments are stifled by a national reserve and inherent mistrust "of the man who talks a lot" and by "lack of ammunition owing to inadequate reading." Residents in an American hospital seemed to him also "more medically mature" than those in his country, where the "apprentice concept dies hard." On the other hand, it may be asked whether the competitive spirit might not sometimes go too far and whether the present life of an American hospital resident allows him to take stock of his position and acquire a perspective of medicine? If a physician is going into clinical practice, breadth of education, in the author's view, is as important as depth at this stage. He also observes that higher positions in American medicine tend to be filled by laboratory rather than clinical men, which is in accordance with medicine's present phase of development. Very few accretions to knowledge, the author points out, result now from "short-term clinical observation" and "salients are thrust out" almost exclusively from

the laboratory. This spells danger for an institution like the Massachusetts General, whose great clinical tradition will gradually have to yield to the pressure. Although Dr. Stokes firmly believes that the discipline of research and controlled observation is a vital ingredient in medical education, there is a question in his mind whether the demand for "printed evidence of submission to this discipline" has not perhaps got somewhat out of hand. As to the patient in America, he finds that he is "investigated" at greater speed and more exhaustively than in England; that he spends less time in the hospital, does not get so much nursing as in Britain, and often returns home too soon by British standards. After discussing the relative merits and flaws of readmission of a patient under the same physician, which is the rule in Britain, he comes to the conclusion that this system is the better of the two because it allows observation of the natural history of disease, but, if the patient is to be best served, it also demands frequent consultation with colleagues. American wards would look untidy by British standards, but this is due to the "amount of patient disturbance" involved in the American system, while in Britain wards are "too spick-and-span" at the expense of other things more important in medical care. On the whole, Dr. Stokes concludes that the American hospital system puts greater emphasis on the acquisition of medical knowledge and search after the truth, which is one of the two main objectives of any doctor, whereas in Britain the stress is on the second, namely, the relief and prevention of suffering in the patients under care. This difference is largely determined by national characteristics and temperament, which makes it difficult to suggest any major compromise in the two systems. However, Dr. Stokes thinks, "it may well be that American efforts in the long run provide greater relief for the human race."

The Climate of Medical Education.

W. MELVILLE ARNOTT, M.D. *The Lancet*, pp. 1-6 (Jan. 3), 1959 (London).

The cult of the healer is as old as mankind, whereas the capacity to promote health and to influence the course of disease is mainly "an affair of the 20th century." However, lay people, generally ignorant of the natural processes of scientific medicine, accord supernatural powers as readily to the modern doctor as to the old, and this belief is the basis of the physician's "influence and affluence" throughout the ages. A rallying point for people's hope to be cured is provided by a doctor who will inspire trust by listening to the patient and then convince him that that he understands not only his symptoms but also his anxieties and "life situation." This should be followed by a thorough examination and advice of treatment, which in many cases may consist of nothing more than a few words of explanation and reassurance. Only a small number of the family doctor's patients will need drugs or surgical care, and fewer still a further investigation of their case. Such approach of the doctor to the patient is, according to Dr. Arnott, the foundation of all clinical practice, although there is, of course, a wide range of specialized activity which may be added to this base. The aim of medical education, therefore, should be to prepare the future doctor for such a role. Is the educational climate in today's medical schools favorable for attainment of this goal? Unfavorable, in the author's opinion, is the prevalent tendency to regard university education as essentially a process of teaching. Such an outlook encourages emphasis on factual knowledge, as opposed to understanding; much compulsory theoretical lecturing, the exclusive use of standard textbooks, and frequent examinations. Lectures, of course, are necessary and may play an important part in medical education if they contribute to the development of the student's mental powers and equip him with informed and logical patterns of thought. During the clinical years, as many lectures as possible should be illustrated by practical examples, because medicine is essentially an applied science, a "technology," although some seem to regard this term as "an affront

to human dignity." The constant intrusion of the practical problem into all aspects of "human biology" need not detract from the purity of the scientific approach. The idea that to introduce practical problems of individual health and disease is in some way "scientifically unworthy" is now vanishing from most medical schools. If the purely theoretical lecture is outmoded as an essential educational device, what then should take its place? The author would like to replace it by a highly developed tutorial system during the preclinical years, while the basis of clinical education should be *clerking*, not only in the usual clinical subjects but also in pathology. The insistence on devoted personal clerkship goes beyond mere vocational instruction and lays the foundation "of that unswerving devotion to the patient" that is the essential ethos of the medical profession. Although it is universally agreed that a doctor should have a broad cultural education as well as a sound training in medical science, there is little agreement as to what this means. If it means the organized study of subjects not connected with the medical curriculum, the author finds little trace of it in the majority of British medical schools. He suggests that pre-university education should consist of English, mathematics, chemistry, physics, biology, and abridged global history. As to foreign languages, the author points out that it is already "repugnantly clear" that the scientifically most important language apart from English is now Russian. Moribund, although "long a'dying," is the belief that a classical education immunizes against academic "myopia." On the other hand, because of the concentration of interest implicit in the process of specialization, medical students are particularly prone to intellectual isolationism, and very few medical schools are in any sense active elements in the *studium generale* of the university. The failure of medicine to take its place in the communion of scholars is considered to be responsible for some of the ills which beset it, such as "blind empiricism, intellectual complacency and reluctance to apply to

clinical problems rigorous standards of scientific evidence." Discussing new developments in medical education in Britain during the postwar years, the author points out that under the stimulus of the General Medical Council's most recent *Recommendations*, all British medical schools "are plunging into an orgy of curriculum revision." It is feared, however, that the changes and improvements hoped for will often be more apparent than real. Many schools in Britain now have difficulties in recruiting able teachers to staff the preclinical departments and tend to fill these positions by non-medical scientists, and, while this should not be considered a disadvantage in itself, it is desirable that a proportion of the preclinical staff be medical men. As to clinical departments, the most outstanding development of the last decade has been the establishment of full-time professorial units in the principal division of clinical practice, which also have a very important place in postgraduate training for *consultant* rank. As to the principal object of medical education, the student, the author fails to detect much truth in a current opinion—voiced mostly by those who resent the National Health Service—that the quality of both students and young doctors is falling. His own impression is that the general standard of intellect and industry is at least as high as, and perhaps higher than, when he was a student, although it might be true that the most able youths in Britain are nowadays going into pure science or technology.

The Medieval University. The Johns Hopkins, pp. 4-5, 30-32 (Dec.), 1958.

The roots of today's universities grew in Europe centuries ago. This article, first of a series on our academic heritage, deals with the amazing growth in power and prestige of the medieval university, which was born in the twelfth century and almost at once rose to dominate all theological, philosophical, and scientific thought of the Occident. The new respect for learning it inspired approached a divine cult. The two great medieval powers, the church and the empire,

although both often defied by the universities, rivaled each other as academic benefactors. The development of academic institutions during the Middle Ages (which has no precedent in the antique world) is considered a logical consequence of the revival of learning which in the eleventh century made Europe emerge from the "Dark Ages." Two factors contributed to a large extent to the rise of the university: the new political and economic stability and the discovery of logic. Logic, derived from Aristotle and Plato, was introduced into the Middle Ages through the rediscovery of the works of another Greek scholar, Porphyry. One passage from his *Isagoge* dealing with the question whether genera and species have a substantial existence or are mere intellectual concepts (today known as the "Doctrine of Universals") played a part of almost unequaled importance in the history of thought. The debates it provoked raged throughout the Middle Ages, resulting often in bloodshed, riots, and mayhem in university towns all over Europe. But its most important immediate effect was the rise of interest in logic and dialectic which gave impetus to the establishment of the university and the two great schools of medieval thought, the *realists* and the *nominalists*. The evolution of the medieval university followed two distinct roads. In northern Europe (France, Germany, England) it had its center in Paris, and education was imparted on a strictly ecclesiastical basis, learning consisting primarily of theology and philosophy. In Bologna, university center for southern Europe (Italy, southern France, and Spain) education was more pragmatic, and more emphasis was given to law, medicine, and letters. In the north, the *masters* and the *chancellor* controlled the universities; in the south, the students. Masters and students formed their own unions to protect their interests against chancellor and townspeople. Out of these unions grew the *studium generale*, the institution which we now know as the university. Paris, Bologna, Salerno, and Oxford were *studia generalia*. To be recognized, they had to possess at least one of the

higher faculties (medicine, canon or civil law, theology, and philosophy). By the middle of the twelfth century the university had achieved great fame and popularity. Kings and popes had watched its growth and had begun to look for ways to capitalize on the new institutions. In 1158, Frederick Barbarossa, emperor of the Germans and king of Sicily and Naples, set a precedent by encouraging students to gather in his territory, granting them a general charter of privileges. The papacy, recognizing the universities as a potential threat to its power, tried to assume control over them by becoming their benefactors. Bulls, issued by the popes, granted them certain privileges, and eventually it was assumed that papal recognition was a prerequisite for any school wishing to become a *studium generale*. The popes also founded their own universities (Toulouse, in southern France, was established as a bulwark against a heretical movement). The medieval universities, possessing no buildings, laboratories, or endowments, were not bound to any locale by physical ties, being essentially a mobile institution. When teachers and students became aware of the prestige, business, and wealth they brought to any place in which they chose to settle, they found a unique instrument of power in the *cessation* (similar to a modern labor strike): if they felt that they had received unfair treatment from king, pope, or townspeople, *cessation* was called, and students and masters packed up and vacated the town, sure to receive invitations from neighboring places or even from other kingdoms. This, together with a growing spirit of nationalism, contributed also to the universities' numerical increase. By the end of the Middle Ages, there were more than 80 institutions in existence, the most prestigious among them Paris, Bologna, Oxford, and Padua, and the status of university professors had risen to unprecedented heights, especially in Italy. With the approaching era of Reformation, however, the university's Golden Age ended. In many instances it had become too rich and corrupt. Teaching was often left to assistants while the

masters engaged in politics and moneymaking. As the universities acquired real estate, *cessation* became impractical, and church and state could impose their control without fear of retaliation. Although in the years to come the development of the university is marked by milestones in every era, it never again attained the height of influence and prestige it possessed during the Middle Ages.

This article is followed in the same issue of *The Johns Hopkins* (pp. 7-12) by a short illustrated *reportage*, which, under the title "The Great Gray Spires of Oxford," deals with the foundation of this university in 1209 (by some 3,000 English scholars expelled from the University of Paris as a result of a quarrel between Henry II and Thomas à Becket) and its rise, from a local *studium* to one of the foremost medieval universities.

The Influence of the General Medical Council on Education. A. P. THOMSON, M.D. *British Medical Journal*, pp. 1248-50 (Nov. 22), 1958.

The president of the British Medical Association (also dean of the University of Birmingham's Faculty of Medicine) recalls the history of the General Medical Council, its *raison d'être*, and its role in contemporary medical education. Established in 1858 by an act of Parliament, its principal purpose was to improve the training of physicians. At the beginning of the nineteenth century, orthodox medicine in England comprised three established orders: the physicians, the surgeons, and the apothecaries. The disturbing element was a "fourth estate" of unorthodox or empirical practitioners, many of them totally untrained. But not only were the evils of quackery manifest but also the inadequacy of the training of many of the "qualified." It was then possible for a person to take a degree in arts, "walk a hospital" for from 3 to 6 months, and be immediately licensed to practice medicine. The medical course at the older universities made few demands on students, who had to be present

at two dissections, "keep an act," and attend the lectures of the regius professor during three terms (although in some university no regius professor had lectured for a century, degrees were conferred just the same). Another factor which contributed to the chaotic situation was the number and diversity of the licensing bodies that conferred professional titles (before 1858, there were 21, including the Archbishop of Canterbury). Also, since these bodies derived their financial support from the fees they could extract from the students, they sometimes embarked "on dubious commercial competition." It is against such a background that the influence of the General Medical Council must be judged today. In its early years, the council's powers in the field of education were very limited. Only the Medical Act of 1886 enabled the council to secure at least a certain standard of proficiency at final or qualifying examinations, although not until 1950 did it become entitled to inspect medical schools to determine whether instruction was satisfactory. Some of the problems that the council had to deal with soon after being established have a strangely modern ring. At a meeting in 1858 it decided that there was urgent need for the improvement of the students' general education. In 1863, its minutes noted with concern a tendency toward "overloading of the curriculum . . . followed by results injurious to the student," and in 1869, the council adopted a resolution that "some limit must be assigned to the amount of knowledge which can be fitly exacted." However, since the council was established principally for the protection of the public, it was inevitable that its *Recommendations* concerning the curriculum should place considerable stress on vocational training and attempt to include in it everything conceivably necessary for efficient practice. Because of the rapid and continuous advance of knowledge in clinical subjects and basic science, these *Recommendations* made many medical courses "grim exercises" in memorizing factual data in preparations for examinations, often neglecting the critical study of principles and the devel-

opment of independent thought, which has drawn a great deal of criticism against the council. In the author's view this criticism is not altogether justified, and the blame should at least be shared by the heads of departments of medical schools who have often ignored the council's exhortations to take a "liberal view" of its official *Recommendations*. There is a bitter controversy going on in Britain, about the right type of training, between those who believe that the student should be taught mainly the techniques and skills of medical art and those who put stress on a sound training in basic and clinical sciences. The author thinks that the council was wise not to enter any of the

fields of conflict. The liberal character of its current *Recommendations* gives the schools almost complete freedom to plan their own curricula, since the medical schools in Britain are now considered "mature" and free from the poverty which still crippled them less than 20 years ago. The great achievements of the General Medical Council in education took place in the first half-century of its existence, when its influence was paramount in raising medical practice "from the status of dubious trade to that of a learned profession." The next 50 years were a period of consolidation rather than activity, and the author is sure that time will justify this policy.

NEW BOOKS

KENNETH E. PENROD
Book Review Editor

Abstracts

Mental Subnormality. Biological, Psychological and Cultural Factors. By RICHARD L. MASLAND, SEYMOUR B. SARASON, and THOMAS GLADWIN. New York: Basic Books, Inc. 400 pp. \$6.75.

This volume is published under the auspices of the National Association for Retarded Children in conjunction with two institutes of the National Institutes of Health, Mental Health, and Neurological Diseases and Blindness. The purpose of the study was to stimulate research and training in the field of mental retardation. It is hoped that the findings contained herein will assist workers in their fields to contribute to a better understanding of the problem of causation of mental subnormality. The three authors of this volume are a physician, a psychologist, and a social scientist. They deal with such varied aspects of the problem as prenatal and perinatal causes, neurological and chemical components, heredity and environmental influences, cultural backgrounds, and incidents of the subject. The book is both an authoritative summary of contemporary knowledge on the causes of mental subnormality and a sign post pointing the directions of desperately needed future research.

Laboratory Instructions in Biochemistry. By ISRAEL S. KLEINER and LEWIS B. DOTI. 5th ed. St. Louis: The C. V. Mosby Co., 1958. 285 pp. \$3.50.

Among the new experiments added in the fifth edition are Lasker and Enkelwitz's test for ketosis, the enzyme test for glucose, and the test for dehydrogenase in milk. Somner's quantitative method for glucose has been included in the chapter on Quantitative Urine Analysis. The directions for several quantitative methods have been improved or simplified. These include the directions for urea, phosphatase, and chole-

sterol in blood. Nearly all the quantitative procedures have now been adapted to the photoelectric colorimeter. However, the directions and calculations for the visual colorimeter have not been omitted, because many students and hospital laboratories have not yet been completely equipped with photoelectric colorimeters.

Textbook of Physiology and Biochemistry. By GEORGE H. BELL, J. NORMAN DAVIDSON, and HAROLD SCARBOROUGH. 4th ed. Baltimore: Williams & Wilkins Co., 1959. 1,024 pp. \$12.50.

The fourth edition of this book, which follows only two years after the third, has involved a considerable rewriting to bring it up to date. However, it turns out to have 4 less pages. The principal aims of the book have not been altered. These are, first, to serve as an introduction to the study of physiology and biochemistry. The book is intended primarily for medical students but should also serve the needs of those studying dentistry, veterinary science, or pharmacy, as well as students of pure science in the early stages of their study of physiology and biochemistry. Second, it is to teach the elementary stages of physiology and biochemistry in close association to emphasize the interwoven nature of the two subjects. The two subjects are treated as one. The references have been considerably updated and include, in some cases, literature published in 1958.

A Textbook of Neurology. By H. HOUSTON MERRITT. 2d ed. Philadelphia: Lea & Febiger, 1959. 710 pp., 182 illustrations. \$12.50.

The second edition of this textbook follows the first by four years. The form of the first edition is followed to a great extent in this volume. There has been some rearrangement of the material; descriptions of newly described diseases have been added; the discussion of the pathogenesis and therapy of a number of morbid en-

titles has been lengthened; the considerations of disease which have become less important have been condensed; the references to the literature have been brought up to date; and new figures have been added.

A Clinical Introduction to Heart Disease.

By CRIGHTON BRAMWELL. New York: Oxford University Press, 1959. 218 pp. \$5.50.

The object of this book is to present the basic principles of cardiology. No attempt has been made to cover the whole field, and only briefly have those conditions usually diagnosed by the consultant with methods of diagnosis and treatment suitable only for the hospital been dealt with. Principally the attention of the author has been directed almost exclusively to problems in which, to judge from his own experience, the family doctor most needs help, and to methods of treatment applicable in the patient's own home. Throughout, an endeavor has been made to correlate physiology with clinical medicine and to include brief biographical notes on a few distinguished cardiologists in the hope of stimulating interest in the history of medicine.

The Hand: Its Anatomy and Diseases. By

JOHN J. BYRNE. Springfield, Ill.: Charles C Thomas, 1959. 359 pp. \$10.50.

This book is far more than a treatise on reconstructive surgery of the hand. It endeavors to serve as a ready reference for physicians covering all phases of hand disease, including structure and development, infections, trauma, and other diseases prior to the last section devoted to reconstructive surgery. In all, an attempt is made to deal with any aspect of medicine and surgery concerned with the hand.

Brain Memory and Learning—a Neurologist's View. By W. RITCHIE RUSSELL. New

York: Oxford University Press, 1959. 134 pp. \$4.50.

In recent years there have been important additions to our knowledge of how the nerve cells of the central nervous system operate, and these advances make it desirable to reconsider the so-called mental processes, insofar as these must depend on the activity of brain cells. For the most part the material of this book has been presented in a manner that can be understood by those who have only a limited knowledge of neurophysiology. No attempt has been made to

refer fully to the literature on the subject, but the author apologizes for reference to his own work out of proportion to its probable importance in the over-all field. The author is a physician who for thirty years has been engaged in research on the effects of head injury. The consequences of concussion have long been of primary interest, and the traumatic amnesias, the focal fits that cause hallucinations, and phantom limbs have received special attention. In these pages he has made an attempt to weave this clinical experience into the latest knowledge of the anatomy and physiology of the neurones of the brain.

Inborn Errors of Metabolism. By DAVID

YI-YUNG HSIA. Chicago: Yearbook Publishers, Inc., 1959. 344 pp. \$9.50.

In recent years, unprecedented progress in the field of biochemical genetics has permitted, for the first time, a logical approach to the various inborn errors of metabolism in man. The present volume is an attempt to present this approach in a simple and understandable form for physicians, but it should be emphasized that the book does not in any way represent a comprehensive or complete survey of the field. Many important references are marked with an asterisk in each section, and these should be consulted by the investigative worker in biochemistry, genetics, or medicine interested in the subject. It is hoped by the author that this volume will be helpful to the general practitioner and the house officer when they next come face to face with a patient who has hereditary disease. Likewise it is hoped that the extensive appendix, which is a laboratory manual devoted to the laboratory procedures for detection of inborn errors of metabolism, will prove helpful to the clinician.

Practical Biology, Vol. I: Practical Zoology.

By C. J. WALLIS. 4th ed. Springfield, Ill.: Charles C Thomas, 1959. 308 pp. \$5.75.

In this revision of *Practical Biology* it was decided to publish it in two separate volumes under the titles *Practical Zoology* and *Practical Botany*, to provide for the needs of students taking these subjects separately. Much new material has been added to the sections dealing with animal morphology and anatomy and vertebrate embryology. At the same time the original object of avoiding long and tedious reading has been borne in mind. Several of the illustrations

have been redrawn and a number of additional ones inserted. Whereas this book is intended for the advanced-level medical and intermediate students in England, these would correspond with the advanced premedical student in this country.

Experimentation in Man. By HENRY K. BEECHER. Springfield, Ill.: Charles C Thomas, 1959. 74 pp. \$3.50.

This monograph is essentially a reprint of the material by Dr. Beecher which originally appeared in the *Journal of American Medical Association*. In it, he discusses at length the aims, history, scope, and necessity, and the ethical, moral, and legal codes surrounding human experimentation.

Group Psychoanalysis. By B. BOHDAN WASEL. New York: Philosophical Library, 1959. 299 pp. \$3.75.

Essentially this book is written for fellow psychiatrists and psychoanalysts, for the psychotherapists and counselors, and also for those in education and industry who are concerned with group dynamics and individual performance. The author's underlying thesis is that group analysis evolves out of historical as well as economic necessity, as the esoteric method of individual analysis became ready for democratization. He constantly focuses on how psychoanalytic theory can be applied to best advantage in both group and individual settings.

Heredity Counseling: A Symposium Sponsored by the American Eugenics Society. Edited by HELEN G. HAMMONS. New York: Paul B. Hoeber, Inc., 1959. 106 pp. \$4.00.

In this book some 17 distinguished experts from a variety of disciplines have pooled their knowledge concerning the major problems of heredity in medicine and on the developing role of heredity counseling in marriage and child-bearing. The study is divided into two main sections: Part I—"Genetics in Medical Practice"—discusses genetics in relation to pediatrics, dentistry, public health nursing, and cardiovascular diseases. In Part II—"Heredity Counseling"—the structure of heredity counseling services, the specific methods used by the genetics counselor, procedures for referral to counselors, and the dangers of inadequate counseling are explored at length. This study focuses attention on an area

that sorely needs development if a sound understanding of the interplay between heredity and environment is to be achieved and applied to improving family health.

Textbook of Surgery. Edited by H. FRED MOSLEY, with 40 contributors. 3d ed. St. Louis: C. V. Mosby Co., 1959. 1,285 pp., 738 illustrations. \$17.00.

The coverage and content of this third edition approximate for the first time that intended when the project was originally planned in 1945. The materials have been completely revised, expanded, and brought up to date. An important new chapter on pediatric surgery has been added. The section on surgery of the heart, great vessels, and lungs has been completely rewritten and extended. There are many additional new contributors assisting with this edition. The coverage of the ankle and foot to correspond with that of the hip and knee has been made, in compliance with many requests. One hundred sixty-eight additional black-and-white photographs and drawings and thirty additional color plates, making one hundred and eight in all, have been added to this edition.

Textbook of Comparative Histology. By WARREN ANDREW. New York: Oxford University Press, 1959. 630 pp. \$15.00.

This textbook presents a broadly comparative view of the structure of the cells and tissues of animals, both invertebrate and vertebrate, and the manner in which these cells and tissues are brought together to form organs. Each of the main systems of the body is treated separately, with comments upon the structures that carry out these functions in all general groups of animals from Protozoa to man. The main purpose of this book has been to integrate the immense amount of knowledge that has recently been gained concerning the microscopic structure of animals. It makes this knowledge meaningful by showing phylogenetic relationships and by demonstrating similarities of adaptation among animals in carrying out similar functions. Throughout the book the comparative aspect of histological structure is stressed.

Dental-medical Emergencies and Complications. By IRA JAY BERLOVE. Chicago: Yearbook Publishers, Inc., 1959. 365 pp. \$7.50.

The purpose of this book is to help the general practitioner of dentistry and the specialist in the various fields of dental and oral surgery, as well as the medical practitioner, to be able to handle more efficiently and quickly the dental-medical emergencies and complications which arise in their offices in daily practise. It is recognized that the dentist is not a physician in the full sense of the term, and there is no intent here to advise his assuming more than a temporary but necessary medical role in times of emergency. The material for this book is a result of the long experience of the author in the active practice of both medicine and dentistry in civilian life and in the armed forces during World War II. It is the aim of this book to place in one source the important and useful diagnostic procedures, methods of treatment, and interpretation of findings, both clinical and laboratory, for the practitioner so that he may be properly prepared to work with speed and assurance that his treatment will be complete and satisfactory.

Books Received

- The Central Nervous System and Behavior.** Transactions of the 1st Josiah Macy, Jr. Conference, February 23, 24, 25, and 26, 1958. Edited by MARY A. B. BRAZIER, New York: Josiah Macy, Jr. Found., 1959. 429 pp. \$5.25.
- Amino Acids and Peptides with Anti-metabolic Activity.** Ciba Foundation Symposium. Edited by G. E. W. WOLSTENHOLME and CECILIA M. O'CONNOR. Boston: Little, Brown & Co., 275 pp. \$8.75.
- Cold Injury.** Trans. Fifth Josiah Macy, Jr., Found. Conference, March 10-15, 1957. Edited by M. IRENE FERRER. New York: Josiah Macy, Jr., Found., 1958. 320 pp. \$5.95.
- Men, Molds, and History.** By FELIX MARTI-IBANEZ. New York: MD Publications, Inc., 1958. 105 pp. \$3.00.
- The Female Offender.** By CAESAR LOMBROSO and WILLIAM FERRERO. New York: Philosophical Library, 1958. 313 pp. \$4.75.
- The World of Dreams.** By HENRI BERGSON. New York: Philosophical Library, 1958. 58 pp. \$2.75.
- Polysaccharides in Biology.** Trans. 3d Josiah Macy, Jr., Conf., May 29, 30 and 31, 1957. Edited by GEORG F. SPRINGER with 4 contributors. New York: The Josiah Macy, Jr., Found., 1958. 234 pp. \$4.75.
- The Unconscious in History.** By A. BRONSON FELDMAN. New York: Philosophical Library, 1959. 260 pp. \$4.75.

Leukemia.....

'LEUKERAN' brand

CHLORAMBUCIL (formerly known as C. B. 1348)

FOR CHRONIC LYMPHOCYTIC LEUKEMIA

A derivative of nitrogen mustard, it has provided amelioration of follicular lymphoma, lymphocytic lymphoma with or without leukemia, and Hodgkin's disease.

Sugar-coated Tablets of 2 mg.

'MYLERAN' brand

BUSULFAN

FOR CHRONIC MYELOCYTIC LEUKEMIA

'Myleran' has been reported to induce remissions, lasting up to two years, in chronic myelocytic leukemia. In addition to the decrease in total white cell count and a selective reduction of immature myeloid cells, it usually gives, early after its administration, a rise in hemoglobin level and pronounced subjective improvement.

Tablets of 2 mg.

'PURINETHOL' brand

MERCAPTOPURINE

FOR ACUTE LEUKEMIA AND CHRONIC MYELOCYTIC LEUKEMIA

'Purinethol' provides worth-while temporary remissions, either partial or complete, in a high percentage of patients. In general, a higher proportion of children than adults with acute leukemia respond favorably.

Tablets of 50 mg.

Facilities for complete and frequent blood counts must be available for patients receiving 'Leukeran', 'Myleran' or 'Purinethol'.

Full information about these products will be sent on request.



BURROUGHS WELLCOME & CO. (U.S.A.) INC., Tuckahoe, New York

NEWS FROM THE MEDICAL SCHOOLS

Albany

Dr. WILBUR A. THOMAS, associate professor of pathology at Washington University School of Medicine, St. Louis, has been named professor of pathology and chairman of the department at Albany Medical College, and pathologist-in-chief at Albany Hospital, effective July 1. He succeeds Dr. ARTHUR W. WRIGHT, who reaches the administrative retirement age this year. Chairman of the department for the past 25 years, Dr. Wright will continue as professor of pathology and an active member of the department. Dr. Thomas joined the Washington University faculty of medicine in 1953 as an instructor and was promoted to his present rank in 1957. From September 1957, to March last year, he served as visiting professor and acting head of the department of pathology at the University of Baghdad, under a Fulbright fellowship.

Dr. JOHN E. HESLIN, professor of urology, has been named president-elect of the American Urological Association.

Boston

Future medical scientists at the school of medicine will have the opportunity to use and experiment with advanced nuclear equipment as the result of a \$10,000 grant from the Atomic Energy Commission, Division of Biology and Medicine. Training in the field of nuclear technology has become an integral part of the curriculum at the school of medicine over the past six years, according to Dr. BELTON A. BURROWS, associate professor of medicine. Dr. Burrows and Dr. F. MAROTT SINEX, professor and chairman of the biochemistry department, are responsible for the development of education and training programs in the field

of nuclear technology as applied to life sciences for medical students and for graduate students enrolled in the division of medical sciences of the graduate school.

Formation of a Boston University-Massachusetts Memorial Hospitals Medical Center to continue and enlarge "the cooperative enterprises of the two institutions in the advancement of patient care, of education in medicine and other health services, and of research," was announced by President HAROLD C. CASE. Formerly on an informal cooperative basis, the move converts the program to a formal association, governed by a Joint Administrative Board. A full-time director of the Medical Center who will serve as chief executive officer of the Board and the Center, will be appointed later by the trustees of both institutions.

Bowman Gray

A program for training scientists in heart research will be established in the school with a \$568,480 grant from the National Institutes of Health. Purpose of the program is to prepare men and women for academic careers in all phases of cardiovascular research and training. Directed by a 10-man faculty committee headed by Dr. HAROLD D. GREEN, professor and chairman of the department of physiology and pharmacology, nearly every department in the school will engage in some phase of the training program. The multi-departmental aspect of the program is a new concept in graduate medical education and is designed to provide fuller training than is now available through individual fellowships which are limited to a narrow cardiovascular field within a single department, said Dr. Green.

The school of medicine was host recently

A List of LIPPINCOTT TEXTS for 1959-60 in:-

ANATOMY OF THE HUMAN BODY

By **R. D. Lockhart, M.D., G. F. Hamilton, M.B., and F. W. Fyfe, M.B.** • 1st Edition
• Published 1959 • 675 Pages • over 900 Illustrations—600 in color. **\$13.50**

HISTOLOGY

By **Arthur W. Ham, M.B.** • 3rd Edition • Published 1957 • 940 Pages • 582 Figure Numbers including 8 Color Plates. **\$11.00**

TEXTBOOK OF THE NERVOUS SYSTEM

By **H. Chandler Elliott, Ph.D.** • 2nd Edition • Published 1954 • 440 Pages • 158 Illustrations • Plus Atlas of 50 Plates. **\$10.00**

HAND ATLAS OF HUMAN ANATOMY

By **Werner Spalteholz** • 8th printing 1955 • 902 Pages • 994 Illustrations, many in Color • Atlas of Roentgenograms. **\$16.00**

ANATOMY IN SURGERY

By **Philip Thorek, M.D.** • 1st Edition • Published 1951 • 970 Pages • 720 Illustrations—211 in Two or Three Colors. **\$22.50**

MAXILLOFACIAL ANATOMY

By **Harry H. Shapiro, D.M.D.** • 1st Edition • Published 1954 • 382 Pages • Over 400 Illustrations. **\$12.00**

BACTERIAL AND MYCOTIC INFECTIONS OF MAN

Edited by **René J. Dubos, Ph.D.** • 3rd Edition • Published 1958 • 820 Pages • 116 Figure Numbers • 60 Tables. **\$8.50**

VIRAL AND RICKETTSIAL INFECTIONS OF MAN

Edited by **Thomas M. Rivers, M.D., and Frank L. Horsfall, Jr., M.D.** • 3rd Edition • Published 1959 • 967 Pages • 134 Figure Numbers • 41 Tables. **\$8.50**

HUMAN PATHOLOGY

By **Howard T. Kursner, M.D., LL.D.** • 8th Edition • Published 1955 • 937 Pages • 557 Illustrations—19 in color. **\$15.00**

ESSENTIALS OF PHARMACOLOGY

By **Frances K. Oldham, M.D., Fremont E. Kelsey, Ph.D., and Eugene M. K. Geiling, M.D.** • 3rd Edition • Published 1955 • 486 Pages • Illustrated. **\$6.00**

SIGNS AND SYMPTOMS

Edited by **Cyril Mitchell MacBryde, M.D.** • 3rd Edition • Published 1957 • 933 Pages • 191 Illustrations • 50 Tables • 6 Color Plates. **\$12.00**

ESSENTIALS OF DERMATOLOGY

By **Norman Tobias, M.D.** • 5th Edition • Published 1956 • 651 Pages • 211 Illustrations. **\$8.00**

PEDIATRICS

Edited by **Donald Paterson, M.D., and John Ferguson McCreary, M.D.** • 1st Edition • Published 1956 • 654 Pages • 192 Figure Numbers • 33 Tables. **\$14.00**

UROLOGY In General Practice

By **Frank C. Hamm, M.D., and Sidney R. Weinberg, M.D.** • 1st Edition • Published 1958 • 286 Pages • 259 Figures. **\$6.00**

ORTHOPAEDICS: Principles and Their Application

By **Samuel L. Turek, M.D.** • 1st Edition • Published 1959 • 815 Pages • 491 Illustrations—40 in color. **\$22.50**

SURGERY—Principles and Practice

By **J. Garrett Allen, Henry N. Harkins, Carl A. Moyer, and Jonathan E. Rhoads** • 1st Edition • Published 1957 • 1495 Pages • 623 Figure Numbers. **\$16.00**

SURGERY OF THE AMBULATORY PATIENT

By **L. Kroser Ferguson, A.B., M.D., F.A.C.S.** • 3rd Edition • Published 1955 • 864 Pages • 664 Illustrations. **\$12.00**

SURGICAL DIAGNOSIS

By **Philip Thorek, M.D.** • 1st Edition • Published 1956 • 320 Pages • 291 Figure Numbers. **\$12.00**

FLUID AND ELECTROLYTES IN PRACTICE

By **Harry Statland, M.D.** • 2nd Edition • Published 1957 • 225 Pages • 31 Illustrations • 5 Tables. **\$6.00**

**EPITOME OF
U.S.P. and N.F.
1956 \$3.00**

**NEW and
NONOFFICIAL
DRUGS
1959 \$3.35**

*Anatomy
Microbiology
Pathology
Pharmacology
Medicine
Pediatrics
Urology
Orthopaedics
Surgery*



J. B. LIPPINCOTT COMPANY

East Washington Square, Phila. 5, Pa.

In Canada: 4865 Western Ave., Montreal 6, P.Q.

to a three-day conference for all Thai medical educators visiting the United States. Sponsored jointly by the China Medical Board of New York, Inc., and the International Cooperation Administration, the meeting was planned and organized for faculty members of the two existing Thai medical schools, who are studying American medical education methods. They are expected to join the faculty of a new medical school now under construction in Thailand. Dr. ROBERT PRICHARD, associate professor of pathology was local chairman for the conference.

Buffalo

Dr. ROBERT L. BROWN, former technical director for the Arner Company of Buffalo, has been appointed an assistant dean of the school of medicine. A graduate of the University of Buffalo, he spent his internship at Buffalo General Hospital, where he held positions of rotating residency and assistant residency from 1954 until 1956. From 1952 to 1954, Dr. Brown served as director of professional services at the Armour Laboratories in Chicago.

Chicago

Two Chicago scientists departed May 9, for a tour of Russian research centers. Dr. DWIGHT J. INGLE and Dr. RACHMIEL LEVINE of the physiology department are members of a party touring Moscow, Leningrad, Kiev, Kharkov, and Sukhumi. Sponsored by the National Institute of Arthritis and Metabolic Diseases of the Public Health Service, the tour is part of an exchange plan between the United States and the U.S.S.R.

Colorado

A lectureship in memory of the late Dr. RAYMOND R. LANIER has been created in the school of medicine, according to Dean ROBERT J. GLASER. Dr. Lanier, who was head of the department of radiology, was fatally injured last November 24, when

struck by a car during a hunting trip. He had joined the Colorado medical faculty in 1950, coming to Denver from the University of Chicago Clinics.

The first Lanier Lecture was given in April at the Medical Center by Dr. LOUIS H. HEMPLEMANN, professor of experimental radiology at the University of Rochester School of Medicine and Dentistry.

Columbia

Dr. STANLEY E. BRADLEY will become chairman of the department of medicine at the College of Physicians and Surgeons and director of the medical service and an attending physician at The Presbyterian Hospital on July 1. He succeeds Dr. ROBERT F. LOEB, who will retire from these posts at the Columbia-Presbyterian Medical Center.

A graduate of Johns Hopkins University, Dr. Bradley received his M.D. degree from the University of Maryland in 1938. He held a Commonwealth Fund Fellowship in Medicine at New York University from 1940 to 1942. He then joined the faculty of Boston University School of Medicine until he came to the Medical Center in 1947, where he has been associate visiting physician since 1951 and professor of medicine since 1958.

Dartmouth

Dr. ROBERT J. WEISS, formerly on the faculty of Columbia University College of Physicians and Surgeons, will join the Dartmouth Medical School July 1, as professor and chairman of the department of psychiatry.

Dr. SHINYA INOUE has been named professor and chairman of the department of cytology. Appointed May 1, Dr. Inoue is a former member of the University of Rochester medical faculty.

George Washington

Dr. ERICH HEINZ, research professor of physiology and USPHS senior research fel-

Tycos[®] accuracy
unsurpassed
for over 50 years



**New TYCOS
Hand Model Aneroid**

Ever since 1907 the name Tycos has stood for accuracy and dependability in sphygmomanometers. The new Tycos Hand Model Aneroid follows in this tradition, with these features for your convenience: Inflating bulb and release valve built right into the back of the gage; easy to hold, fits snugly and naturally in your hand, feather-touch valve control. Gage can be held at any distance or angle for ease of reading. Accurate in any position. Backed by the famous Tycos 10-year triple warranty. Complete with hook-type cuff, in genuine leather zipper case. **\$49.50.** Taylor Instrument Companies, Rochester, N. Y., and Toronto, Ontario.

Taylor Instruments
MEAN ACCURACY FIRST

low, has resigned to accept the position of chairman of the department of physiological chemistry at the school of medicine, University of Frankfurt, Germany.

Dr. FRIEDRICH P. J. DIECKE, assistant professor of physiology at the University of Tennessee, will join the George Washington medical faculty September 1, as associate professor of physiology.

Kansas

Dr. KERMIT E. KRANTZ will leave his position as assistant professor in the school of medicine at the University of Arkansas to become professor and chairman of the department of obstetrics and gynecology at the University of Kansas School of Medicine, effective July 1. He succeeds Dr. LEROY A. CALKINS, who held the chairmanship for the past 30 years. Dr. Calkins, who will reach the administrative retirement age this year, will remain on the faculty as professor in the department.

Maryland

The department of biochemistry has received an \$11,910 grant from the Atomic Energy Commission for the purpose of education and training in the use of radioisotopes in biology and medicine. Under the direction of Dr. GULFORD G. RUDOLPH, associate professor of biochemistry, the program will give medical and graduate students training in the experimental use of radioactive isotopes.

A five-year training program in renal and hypertensive diseases is being established in the department of medicine with a grant of \$100,000 from the National Institutes of Health. The program will embrace experimental pathological techniques, diagnostic methods, and use of the artificial kidney.

Michigan

Funeral services for Dr. FRANK H. BETHELL, a member of the University of Michigan medical faculty for 28 years, were held April 24, in Ann Arbor. Dr. Bethell, who was

professor of internal medicine and director of the Simpson Memorial Institute, died suddenly shortly after returning from a convention in Chicago.

New York University

Dr. BERNARD L. HORECKER has been appointed professor and chairman of the department of microbiology, succeeding Dr. ALWIN M. PAPPENHEIMER, JR., who has become chairman of tutors of the department of biological chemistry at Harvard Medical School. Dr. Horecker comes to the NYU faculty from the National Institute of Arthritis and Metabolic Diseases of the National Institutes of Health where he was chief of the Laboratory of Biochemistry and Metabolism.

North Dakota

A research professorship in biochemistry will be established in the medical school with a grant of \$75,000 from the Hill Family Foundation of St. Paul. An established investigator is being sought for the position, which will provide a stipend of \$15,000 annually for five years. Space and facilities offered by the Ireland Research Laboratories contributed to making the grant possible, UND officials said.

Northwestern

Dr. JOHN A. D. COOPER has been named associate dean of the medical school. He has been assistant dean since 1956.

A graduate of New Mexico State University, Dr. Cooper came to Northwestern in 1939 as a graduate assistant in physiological chemistry. He received his Ph.D. degree in biochemistry there in 1943 and his M.D. degree in 1950. In 1949 he organized and taught a course on the application of nuclear physics and biology in medicine, the first of its kind in any medical school.

Pennsylvania

Dr. JONATHAN E. RHOADS is resigning his position as provost of the university

Repeating the Special Combination
offer of . . .

GRANT: ATLAS OF ANATOMY *plus* STEDMAN'S MEDICAL DICTIONARY

The illustrations of GRANT, 4th edition, are, according to the *Journal of Medical Education*, "for the most part simple and realistic in appearance, but there are also some diagrams that have great teaching value. The text is concise and easy for students to follow. The numerous, colored illustrations greatly enhance the atlas, and the method of color printing that is used keeps the price within a range that is attractive to students. This atlas will not need to be recommended to medical students because they will discover it and use it entirely on their own."

By J. C. BOILEAU GRANT, M.C., M.B., Ch.B., F.R.C.S. (Edin.), University of Toronto

1956 • 577 pp., 714 figs. • 4th edition

The latest (19th) edition of the standard STEDMAN'S MEDICAL DICTIONARY is the only medical dictionary containing the complete *Nomina Anatomica* as revised by the International Nomenclature Committee. Other features which make STEDMAN'S outstanding are: approximately 4500 new words and definitions in this edition; all pharmacological terms changed from Latin to English in conformity with the new standard terminology; all pharmacological terms tabulated in 40 separate tables under such headings as Acids, Alcohols, Aluminums, etc.; all illustrations reviewed—some discarded, some replaced, some altogether new; fine treatment of scientific word derivations.

Edited by NORMAN BURKE TAYLOR, V.D., M.D., F.R.S., F.R.C.S., University of Western Ontario; formerly of the University of Toronto; co-author of Best & Taylor's "Physiological Basis of Medical Practice"; and LT. COL. ALLEN ELLSWORTH TAYLOR, D.S.O., M.A.

1957 • 1700 pp., 23 pls., many figs. • 19th edition

STEDMAN'S MEDICAL DICTIONARY . . . Regular price: \$12.50

GRANT: ATLAS OF ANATOMY . . . Regular price: \$15.00

A \$2.50 Saving!

Regular price for both: \$27.50

SPECIAL COMBINATION PRICE: \$25.00



Baltimore 2, Maryland

in order to resume, on a full-time basis, teaching, research, and practice in the field of surgery. He will continue to serve as provost until his successor is appointed.

Dr. Rhoads is professor of surgery in both the school of medicine and the graduate school of medicine, and is also assistant director of the Harrison department of medical research at the university.

Rochester

Dr. JOHN ROMANO, professor and chairman of the department of psychiatry, will spend the next year abroad under a Commonwealth Fund Advanced Fellowship for the period July 1, 1959, to June 30, 1960.

The sabbatical year of study includes lectures in a number of universities in the British Isles and on the Continent. Dr. Romano, who is also psychiatrist-in-chief of Strong Memorial and Rochester Municipal hospitals, will study educational, research and community organizational problems in the field of mental health.

Stanford

Dr. J. GARROTT ALLEN, professor of surgery at the University of Chicago, has been named to head the medical school's department of surgery, effective July 1. A graduate of the Harvard Medical School, Dr. Allen is also attending surgeon at the University of Chicago Clinics. He is currently a member of the Surgery Study Section of the Public Health Service, a member of the Advisory Panel on Medical Sciences for the Department of Defense, and president of the Illinois Society for Medical Research.

Stanford Professor JOSHUA LEDERBERG, co-winner of the 1958 Nobel Prize for Medicine, delivered his Nobel Prize Lecture in Stockholm at the Royal Caroline Institute of Medicine recently. While in Naples, he and Mrs. Lederberg, who is also a geneticist, participated in a symposium sponsored by the Ciba Foundation.

A British physician, who is an exponent of a new "unlocked door" type of psychiatric care, will assist in setting up a psychiatric

treatment unit at Stanford's new \$22 million medical center now under construction.

Professor MAXWELL S. JONES, director of the Social Rehabilitation Unit at Belmont Hospital in Surrey, England will serve as visiting professor of psychiatry for the year beginning July 1. Though a unit is already in operation and will be continued at San Francisco after the medical school moves to the campus next summer, the new unit will be larger and will be a combined undertaking by practicing psychiatrists of the Palo Alto area working with the Stanford department of psychiatry assisted by Dr. Jones.

S.U.N.Y. Syracuse

President CARLYLE JACOBSON has announced the establishment of a two-year school of nursing at the Medical Center with qualified applicants now being accepted for September of this year. The program is not designed to train nurses who will do administrative or specialized nursing. Graduates will receive the degree of associate in applied science and will be eligible to take the New York State licensing examinations for registered nurses.

Dr. LYTT I. GARDNER, professor of pediatrics, has received a \$146,000 grant from the Public Health Service to support a graduate training program in human genetics. Awarded by the Division of General Medical Sciences of the National Institutes of Health, the grant will provide stipends for senior postdoctoral research fellows over a five-year period.

Tennessee

The division of pediatrics has been awarded a grant of \$191,630 from the National Heart Institute of the NIH, Public Health Service, in support of a graduate training program. Under the direction of Dr. JAMES N. ETTELDORF, professor of pediatrics, the program is designed for physicians who have completed or are completing their residency in pediatrics. Such pedia-

never
any
compromise
with
quality

May Ophthalmoscope and
Arc-Vue Otoscope with the
luxury look-and-feel.

Brilliant illumination,
superlative optics. Bayonet
lock, nylon specula, lifetime
satin-finish aluminum.
Choice of battery handles.
Sleek pocket case.

BAUSCH & LOMB



tricians will receive additional training in cardiovascular diseases and related fields.

Texas (Southwestern)

Dr. HUGH E. WILSON III, assistant professor of surgery, was named by the Junior Chamber of Commerce recently as one of the nation's Ten Outstanding Young Men of 1958. Recognition resulted from Dr. Wilson's work in open heart surgery.

Dr. ALVIN TAUROG, formerly of the department of physiology at the University of California, will join the department of pharmacology as associate professor in the fall.

Wisconsin

A drive to solicit \$600,000 from business and industry toward a new \$850,000 medical library has been launched by the University of Wisconsin Medical Alumni Association. When completed, the library will bear the name of former medical dean Dr. WILLIAM S. MIDDLETON. Dr. Middleton is now chief medical officer for the Veterans' Administration, Washington, D.C.

Woman's Medical College

Dr. MARION FAY has been named President of The Woman's Medical College of Pennsylvania. Taking over her duties May 1, Dr. Fay will continue as dean of the College.



Dr. Marion Fay

Holder of four honorary degrees, Dr. Fay received her Ph.D. degree from Yale University. Before joining the

Woman's Medical College in 1935 as professor of physiological chemistry, she served on the faculties at Colorado, Yale and Texas Universities.

Currently being constructed at the College is a new \$2,400,000 wing to be used

largely for research—a program which Dr. Fay intends to further.

Alberta

Dr. WALTER C. MACKENZIE, professor and chairman of the department of surgery, has been named dean of the faculty of medicine. A graduate of Dalhousie University, Dr. MacKenzie received the M.D.C.M. degree in 1933 and his M.S. in Surgery from the University of Minnesota in 1937.



Dr. W. C. MacKenzie

A member of the faculty since 1949, he is also Senior Consultant for the Department of Veterans Affairs for Northern Alberta, and serves as a member of the Medical Advisory Committee for the National Heart Foundation of Canada and the Advisory Medical Committee on Medical Research of the National Research Council of Canada.

Dr. JAMES S. THOMPSON has been appointed assistant dean. Dr. Thompson, who received his M.D. degree from the University of Toronto, came to Alberta in 1950 as associate professor of anatomy and was named executive secretary of the faculty of medicine in 1953. He was formerly associated with the Banting Institute of Toronto and served on the faculty of medicine at the University of Western Ontario from 1948 to 1950. Dr. Thompson's appointment becomes effective September 1.

McGill

Dr. WILLIAM CONE, brain surgeon, died May 4 in his office at the Montreal Neurological Institute. Dr. Cone was professor of neurosurgery at the university and chief of the neurosurgery service at the neurological institute.

A graduate of the University of Iowa College of Medicine, he came to McGill in 1929 as assistant professor and was made full professor in 1950.

HELP US KEEP THE THINGS WORTH KEEPING

If you're a father, you don't have to look into your briefcase for the facts on how much peace is worth to you.

The answer is right in your heart.

But keeping the peace isn't just a matter of wanting it. *Peace costs money.* Money for strength to keep the peace. Money for science and education to help make peace lasting. And money saved by individuals to keep our economy healthy.

Every U.S. Savings Bond you buy is a direct investment in America's Peace Power. It not only earns money for you—it earns *peace*. And it helps us keep the things worth keeping.

Are you buying as many Bonds as you might?



Photograph by Harold Halma

HELP STRENGTHEN AMERICA'S PEACE POWER BUY U. S. SAVINGS BONDS

The U.S. Government does not pay for this advertising. The Treasury Department thanks The Advertising Council and this magazine for their patriotic donation.



Saskatchewan

With a grant of \$11,000 from the Milbank Memorial Fund of New York, plans are being made to give selected third-year medical students a chance to gain a better understanding of community health problems. A Public Health Preceptorship Scheme will be started this year by the department of social and preventive medicine in the college of medicine of the university. The new program will be an extension of the

existing Preceptorship Scheme in Rural General Practice under which third-year students must spend two weeks with a general practitioner in a rural center.

Dr. ALEXANDER ROBERTSON, head of the department of social and preventive medicine, said the program has received the collaboration of the Saskatchewan Department of Public Health, as well as that of the individual health officers concerned and doctors in private general practice.

ITEMS OF CURRENT INTEREST

Second World Conference on Medical Education

Patterns of success and patterns of failure in the great cooperative movement to improve the health care of people everywhere will be exchanged and compared when medical educators from 50 different countries gather in Chicago for the Second World Conference on Medical Education, Aug. 29 to Sept. 4. Collaborating with the World Medical Association in sponsoring the Chicago conference are the World Health Organization, the Council for International Organizations of Medical Sciences, and the International Association of Universities.

President Eisenhower, who has been keenly interested in the financial problems of medical schools every since his days at Columbia University where he helped organize the National Fund for Medical Education, is patron of the conference. He has been invited to address the opening plenary session on Monday, Aug. 31.

Serving as president of the Chicago conference will be Dr. Raymond B. Allen, chancellor, University of California, Los Angeles. Deputy presidents are Dr. R. F. Farquharson, Faculty of Medicine, University of Toronto, and Dr. Victor Johnson, of the Mayo Foundation, Rochester, Minn.

SKF Fellowship Created

Creation of the Smith Kline & French Fellowship in Physical Medicine and Re-

habilitation for a Mexican physician to undertake postgraduate training in the United States has been announced.

Providing three years of training, the first presentation went to Dr. Leobardo Ruiz of Mexico City, who will begin his program at New York University-Bellevue Medical Center on July 1.

The fellowship will be administered by the World Rehabilitation Fund, an American voluntary organization, in cooperation with the International Society for the Welfare of Cripples. The latter's affiliate in Mexico is the Mexican Rehabilitation Association, of which Mr. Romulo O'Farrill is president.

SAMA Annual Meeting

Scientific papers were presented by medical students and residents for the first time at the Ninth Annual Convention of the Student American Medical Association, April 30-May 3, at the Sheraton Hotel, Chicago. Dealing with such topics as cancer, hormones, internal parasites, and blood cholesterol levels, eight medical students and three residents presented their papers at scientific sessions.

In addition to the scientific portion of the meeting, the Association's House of Delegates convened for the conduct of official business and policy declarations.

Dr. Alton E. Ochsner, specialist on lung cancer, and Dr. Corbett H. Thigpen, author

PUBLICATIONS

Useful information for both medical educators and students is published by the Association of American Medical Colleges. These publications may be obtained from the Association headquarters office, 2530 Ridge Avenue, Evanston, Ill.

Books and Pamphlets

Admission Requirements of American Medical Colleges—1958–59 (\$2.00).

History of the Association of American Medical Colleges—1876–1956

The National Health Service of Great Britain (\$1.00).

El Estudiante de Medicina (\$1.00)

Suggestions for Supplementing the Medical Curriculum in Time of National Emergency

A Study of Medical College Costs \$(1.50)

The Journal of MEDICAL EDUCATION

A monthly journal devoted exclusively to medical education.

Subscription rates: \$7 per year, \$13.50 two years, \$19.50 three years. Foreign \$8 per year, \$15.50 two years, \$22.50 three years. Pan America and Canada \$7.50 per year, \$14.50 two years, \$21.00 three years. Single copies \$1.00.

Journal supplements available:

Education of Physicians for Industry (\$2.00).

Support of Research by American Cancer Society (\$1.00).

Survey of Women Physicians graduating from Medical School 1925–40 (\$1.00).

Medical Education for Foreign Scholars in the Medical Sciences (\$1.50).

Teaching Institute Reports (\$2.00 paperbound, \$3.00 clothbound).

Report of the Conference on Preventive Medicine in Medical Schools (Report of the 1952 Institute).

The Teaching of Physiology, Biochemistry and Pharmacology (Report of the 1953 Institute).

The Teaching of Pathology, Microbiology, Immunology and Genetics (Report of the 1954 Institute).

The Teaching of Anatomy and Anthropology in Medical Education (Report of the 1955 Teaching Institute).

The Appraisal of Applicants to Medical School (Report of the 1956 Institute).

The Ecology of the Medical Student (Report of the 1957 Institute).

Medical Audio-Visual Institute Publications

Film Catalog, Fall 1955 and Supplements.

Films in Psychiatry, Psychology and Mental Health (available from the Health Education Council, 92 Belmont Drive, Livingston, N.J.).

Films in the Cardiovascular Diseases (Part I available from the American Heart Assn.), 44 E. 23rd St., New York 10, N.Y. (\$2.00).

Part II available from the Medical A-V Institute (\$2.00).

Publications of Related Organizations

Hospitals Participating in the Matching Program 1959 (NIMP).

Results of the Matching Program 1959 (NIMP publication).

The Student and the Matching Program 1959 (NIMP publication).

Medical College Admission Test—Bulletin of Information 1959 (Educational Testing Service publication).

Psychiatry in Medical Education—1951 Conference (\$1.00).

The Psychiatrist: His Teaching and Development—1952 Conference (\$2.50).

(The above can be obtained from: American Psychiatric Assn., 1785 Massachusetts Avenue, NW, Washington, D.C.).

of the book "The Three Faces of Eve," were featured speakers.

Summarizing the past year's activities and projects for ensuing years, President E. Carwile LeRoy, a junior medical student at the University of North Carolina School of Medicine, urged SAMA members to establish a closer liaison with the Association of American Medical Colleges, the American Medical Association, and other allied organizations.

William Kirkham, a junior at the University of Oklahoma School of Medicine was elected president for the coming year. Other SAMA officers are E. H. Lamkin, Jr., a junior at the University of Indiana School of Medicine, vice-president, and Emil Pollard, a sophomore at the University of Michigan School of Medicine, treasurer.

Rockefeller Fellowships

The Rockefeller Institute has received a bequest of approximately \$1 million from the estate of the late Sophie D. Fricke of New York City, for the purpose of fostering international understanding, training scientists of exceptional promise, and supporting significant research. Thus, four fellowships will be awarded each year to young scientists in England, France, Denmark, and Sweden for study and investigation at the Institute. The objective of these fellowships is to foster closer relations between American scientists and their colleagues from abroad, according to Dr. Detlev W. Bronk, president of the Rockefeller Institute.

American Heart Association Grants

Applications are now being accepted by the American Heart Association for support of research to be conducted during the fiscal year beginning July 1, 1960. September 15, 1959 is the deadline for applying for Research Fellowships and Established Investigatorships. Applications for Grants-in-Aid must be made by November 1, 1959.

Further information and application forms may be obtained from the Assistant

Medical Director for Research, American Heart Association, 44 East 23rd St., New York 10, N.Y.

ACPRA to Hold Annual Meeting

The medical section of the American College Public Relations Association will hold their annual meeting July 12-15 at French Lick, Ind. Membership in the organization is comprised of public relations and public information persons in all the medical schools in the country.

Speakers will include representatives from higher education, the National Institutes of Health, the American Medical Association, and the Association of American Medical Colleges, as well as experts from the fields of communication and fund raising.

Additional information may be obtained by writing to Joseph V. Brown, Health-Science Editor, State University of Iowa, Iowa City, Iowa.

Health Insurance Institute

Better liaison and increased cooperation between doctors, hospitals and health insurers to curb spiraling medical care costs was urged by Dr. Anthony J. J. Rourke recently.

Addressing 300 insurance company executives at the annual meeting of the Health Insurance Association of America in Philadelphia, May 5, Dr. Rourke stated that "as soon as your industry and our profession can sit down and properly evaluate and measure the portion of increased costs which are due to the substitution of adequate care in place of inadequate care and that portion which may be considered abuse, we will have taken a long step toward better understanding." Dr. Rourke is a lecturer in public health at Columbia University College of Physicians and Surgeons and hospital consultant.

MEND News

The third and fourth MEND symposia of the year were presented in April. The symposium conducted by the Aero Medical

Published May 1, 1959: ANNUAL REVIEW OF MEDICINE

Volume 10

Editor: D. A. Ryland

Associate Editor:

W. C. Creger

Editorial Committee:

R. E. Cooke

W. C. Cutting

G. J. Dammin

M. A. Hayes

D. A. Ryland

E. A. Sied, Jr.

Vols. 1 to 9 also
available

448 pages

\$7.00 postpaid (U.S.A.); \$7.50 postpaid (elsewhere)

ANNUAL REVIEWS, INC. 231 Grant Ave., Palo Alto, California

CONTENTS:

Infectious Diseases (Some Aspects of Salmonellosis)
Gastroenterology
Diseases of the Cardiovascular System (Excluding Hypertension and Atherosclerosis)
Cardiovascular Diseases (Atherosclerosis)
Diseases of the Cardiovascular System (Surgical)
Nutrition and Nutritional Diseases
Endocrinology (Diabetes)
Endocrinology (Reproduction)
Endocrinology (Surgery of the Endocrines)
Allergy and Immunology
Neoplastic Diseases (Cancer)
Neoplastic Diseases (Tumor Chemotherapy)
Diseases of the Nervous System
Psychiatry
Special Therapeutics (Transfusions)
Diseases of the Skin
Pediatrics (Noncardiac Anomalies)
Diseases of the Respiratory System
Environmental Medicine

Laboratory at Wright-Patterson Air Force Base, Dayton, Ohio, dealt with "Research and Development in Aviation and Space Medicine." The subject of "Nutrition under Wartime or Disaster Conditions" was explored in a symposium given by the Army, Denver, Colo. One hundred and twelve medical school faculty members and representatives of Government agencies participated in the former symposium, 93 in the latter.

Government Notes

Department of Health, Education, and Welfare . . . A new category of professional personnel in fields related to health and medicine has been established in the Commissioned Corps of the Public Health Service. It is known as the Health Services category and brings to 11 the number of professional groups now comprising the Commissioned Corps. Established to provide a more precise classification for Public Health

Service commissioned officers in the health-related professions, it includes health educators, nutritionists, medical record librarians, hospital administrators, and medical social workers.

Air Force . . . The U.S. Air Force Medical Service will establish nine accredited residencies in hospital administration at USAF hospitals in 1960. Air Force Medical Service Corps officers will be assigned to these hospitals as administrative residents to fulfill the academic requirements for a master's degree in hospital administration.

The first Advanced Course in Aerospace Medicine for senior medical officers from allied nations will begin in September at the USAF School of Aviation Medicine, Randolph Air Force Base, Texas. The 27-week course will consist of three parts: academic aviation medicine, physiological training program, and practical aspects of aviation medicine.

PERSONNEL EXCHANGE

Faculty Vacancies

PSYCHIATRIC SOCIAL WORKERS: Active participation in clinical teaching and in expanding program of services in the department of psychiatry and in pediatric-psychiatry clinic in eastern university medical school. Excellent opportunity for individuals interested in social work contribution in medical education. Qualifications: Master's degree with psychiatric sequence, and for senior positions experience in supervision or teaching, preferably in psychiatric clinical setting. Send curriculum vitae with application. Address: V-74.

PHYSIOLOGIST OR PHARMACOLOGIST: Teaching and research position in medical school. N.Y.C. area. M.D. or Ph.D. required. Training in neurophysiology desired. Salary based on qualifications and experience. Address: V-75.

PROFESSOR OF PREVENTIVE MEDICINE: The University of Alberta invites applications for the position of professor and head of the department of preventive medicine in the faculty of medicine. Duties will include administration of the department, teaching of graduate and undergraduate students and a program of research. Salary will be \$10,000 per annum with consulting privileges. Interested applicants should send a complete curriculum vitae, names of three referees, and a recent photograph to the office of the Dean of Medicine, University of Alberta, Edmonton, Alberta.

PEDIATRICIANS: Two or 3 part-time teaching positions—may use remainder of time for private practice. Address: F. G. Gillick, M.D., Creighton University School of Medicine, Omaha 2, Nebraska.

PSYCHIATRISTS: Full-time and part-time teaching positions. Need coordinator of teaching grant program. Would function under departmental director. Address: F. G. Gillick, M.D., Creighton University School of Medicine, Omaha 2, Nebraska.

ASSISTANT PROFESSOR OF PREVENTIVE MEDICINE: Full-time appointment in department of preventive medicine with teaching and research opportunity, including comprehensive medical care teaching. Must have M.P.H. degree. Address: V-76.

FELLOW IN VIRUS RESEARCH: M.D., with at least one year of residency in pediatrics for training in diagnostic virology. Duties include approximately three hours of ward rounds, and five hours of training and research in the virus laboratory. The individual is expected to direct and consolidate activities in the clinical and research areas. Salary \$6,000 per annum. Position available for 2-year tenure. Apply Dr. H. A. Wenner, University of Kansas Medical Center, Kansas City, Kansas.

IMMUNOCHEMIST OR BIOCHEMIST: Must be interested in field of infectious diseases. Activities include studies on immune mechanisms and on the biochemistry of virus infections. Full-time research position. Salary open; minimal \$8,000. Apply H. A. Wenner, M.D., Section for Virus Research, University of Kansas School of Medicine Kansas City, Kansas.

PSYCHIATRISTS: Newly organized department of psychiatry in east coast medical school needs full-time psychiatrists for research and teaching. Rank and salary are dependent on experience and qualifications. Address: V-77.

DIRECTOR OF MEDICAL EDUCATION: for new 350-bed hospital. New position. Internal medicine specialist preferred for full-time position. Beginning salary about \$15,000 per year. Address inquiries to: Sister Administrator, Providence Hospital, Washington 17, D.C.

PHARMACOLOGIST: The University of Alberta invites applications for the position of Associate Professor of Pharmacology, effective not later than September 1, 1959, at a minimum salary of \$8,000 per annum, with annual increments. Duties include undergraduate and graduate teaching and a program of research. Applicants possessing a medical degree, in addition to qualifications in pharmacology, will be given preference. Applications should include a recent photograph or snapshot, a curriculum vitae, and the names of three references, and should be sent to the Dean of Medicine, University of Alberta, Edmonton, Alberta, Canada.

PSYCHIATRIC SOCIAL WORKER: Position open on new child psychiatry inpatient service to be opened on July 1. Research and teaching will be emphasized in developing program. Preferred qualifications are Ph.D. degree or doctoral candidate with solid clinical grounding in psychiatric social work. Master's degree in Social Work with 5 years psychiatric clinical experience will be considered. Position carries academic appointment. Send curriculum vitae with application. Address: V-78.

PHARMACOLOGIST: Full-time appointment in department of pharmacology for assistant professor of pharmacology. Ph.D. or M.D., preferably the latter, and previous training in pharmacology required. Salary \$7,000 or higher according to qualifications. Interested candidates should send a complete curriculum vitae and recent photograph to Dr. M. F. Murnaghan, Professor and Head, Department of Pharmacology, University of Ottawa, Ottawa 2, Ontario, Canada.

ASSISTANT IN PSYCHIATRY: Research assistant wanted for psychosomatic project from July 1, 1959. Associated university affiliation. Salary according to qualifications up to \$5,700. Apply to Professor R. B. Sloane, Department of Psychiatry, Queen's University, Kingston, Ontario, Canada.

To aid in solution of the problem of faculty vacancies, MEDICAL EDUCATION will list persons and positions available, as a free service. The school department or person may have the option of being identified in these columns or of being assigned a key number for each position listed. Mail addressed to key numbers will be forwarded to the person or department listing the request.

Information for these columns should reach the Personnel Exchange, Journal of Medical Education, 2530 Ridge Avenue, Evanston, Illinois, not later than the 10th of the month which precedes the month in which the listings will appear.

Personnel Available

PEDIATRICIAN: MPH, desires teaching and/or research position with clinical emphasis. Address: A-386.

ANATOMIST: Position wanted in university anatomy department in U.S., by married male with family. British medical school degree in medicine, extensive clinical experience, and recent teaching and research experience in anatomy in England. Good references available. Available to attend interviews in the U.S. now. Address: A-387.

OBSTETRICIAN-GYNECOLOGIST: Foreign physician, age 30, three years residency in obstetrics and gynecology in teaching hospitals of U.S.A., with good command of English, desires position as preceptor in Ob-Gyn., starting July 1959. Address: A-389.

UROLOGIST: Foreign physician, age 30, one year internship, three years in urology and one in urological research in teaching hospitals of U.S.A. Desires position as preceptor in urology, starting July 1959. Good command of English. Address: A-390.

THORACIC SURGEON: M.D. 1947, University of Istanbul. Served an internship in surgery (1954-55) Montana Deaconess Hospital, Great Falls, Montana. Served as Fellow in Thoracic Surgery (sponsored by American College of Chest Physicians) Knoxville, Tenn. Presently in charge of thoracic surgery department at Armenian Hospital, Istanbul. Desires teaching position in American medical school. Address: A-391.

PATHOLOGIST: Age 35, married. Certified PA 1955. Academic background and three years teaching experience. Wishes to relocate in West. Will consider part-time or full-time teaching appointment. Especially interested in surgical pathology. Address: A-392.

OTOLARYNGOLOGIST and HEAD and NECK SURGEON: Age 32; board eligible. University of the Philippines graduate. Completed five and one half years' training in eastern medical centers (3 years otolaryngology, 6 months more bronchoscopy, and 2 years general and head and neck surgery). Desires one year fellowship, or assistantship, or academic position. Available August or October, 1959. Address: A-393.

BIOCHEMIST: Ph.D., age 30. Assistant professor of biochemistry desires academic position. Five years medical and graduate teaching experience. Membership in national societies, honors, grants, graduate students. Fifteen full-length publications. Research interests: enzymology, microbial metabolism and protein metabolism. Available July 1, 1959. Address: A-394.

PHYSIOLOGIST-PHARMACOLOGIST: Ph.D., 1954. Male, married, with family. Presently teaching physiology in dental school. Desires teaching position with research opportunities in physiology or pharmacology department. Address: A-395.

PATHOLOGIST-BACTERIOLOGIST: M.S., B.S. (London University); M.R.C.S. (England) L.R.C.P. (London). Age 42, family; registered with British General Medical Council. Five years experience in general and clinical pathology and bacteriology, London, England. Completing 3-year contract in Jamaica. Desires academic appointment in U.S., preferably in the South. Available May, 1959. Address: A-397.

VIROLOGIST-PATHOLOGIST: Excellent experience and background in infectious diseases, human and animal viruses. Broad interests include cancer and pathogenesis. D.V.M.-Ph.D., age 34. Presently in industry. Desires research and teaching position. Would consider Senior Fellowship. Address: A-398.

INTERNIST-HEMATOLOGIST: Age 36, Board certified, with five years academic-type practice and previous research experience, seeks academic position in moderate sized city. Address: A-399.

PSYCHIATRIST: Female, age 26, completing final year of residency in June 1959. Training includes two years in an active university program and participation in family studies in schizophrenia. Analytically (Sullivanian) oriented. Special interests: Psychotherapy with schizophrenics, teaching professionals and non-professionals, liberal arts. Seeks position teaching in medical school with time for limited private practice. Interested in small university community. Address: A-400.

PHARMACOLOGIST: Ph.D., 1955; married, 3 children. Presently teaching pharmacology to medical students. Publications. Research interests: drug metabolism and toxicology. Desires teaching appointment in medical school that would provide opportunity for completion of courses leading to M.D. degree. Would continue teaching pharmacology after receiving the degree. Available August 1. Address: A-401.

INTERNIST: M.D. Age 33. Currently on faculty of eastern medical school. Experience in private practice and industrial medicine. Eight months experience and training in psychiatry. Desires faculty appointment with opportunity for clinical investigation in cardio-vascular diseases, as well as teaching general medicine, in teaching hospital. Address: A-402.

PATHOLOGIST: Wishes to join Pathology Department to contribute to, or help develop, a strong, well balanced teaching program with emphasis on best utilization of materials, methods and communication with students. Also interest and experience in basic research. Previous experience in undergraduate, graduate, and medical teaching, including several years in Anatomy (Ph.D.), followed by M.D., internship and specialization in Pathologic Anatomy (will complete July '59). Age 38. Desires permanent position with good opportunities in primary fields of interest. Address: A-403.

VETERINARIAN: Experienced in microbiological techniques; presently at a medical school. Desires position as director of experimental animal laboratory. Address: A-404.

MICROBIOLOGIST-VIROLOGIST: Ph.D., presently on university faculty. Five years experience in virology and tissue culture publications. Desires academic position involving full-time research or research and teaching. Address: A-405.

ORTHOPAEDIC SURGEON: 38. Wants appointment in U.S.A. or Canada. Main interest in Traumatic Surgery and Research. Now holding consultant post at well known British Hospital. Mastership in Surgery and Fellow of the Royal College of Surgeons. Address: A-406.

PSYCHIATRIST-NEUROPHYSIOLOGIST: M.D. Certified in psychiatry and as a mental hospital administrator. FAPA and FSPA. No formal training in neurophysiology but using some of its principles with gratifying results in coping with the manifold problems of psychosomatic medicine. Desires full-time career teaching position in medical school with opportunities for teaching psychiatry; for learning clinical neurophysiology well enough to instruct; and for carrying on more intensive course of clinical investigation. Address: A-407.

PHYSIOLOGIST: Ph.D., 1957, age 31, married, one child. Research in cardiovascular-renal physiology. Strong background in hypertension. Eleven publications. Experience in teaching medical, dental, and pharmacy students. Desires research position with or without teaching responsibilities. Address: A-408.

MICROBIOLOGIST: Ph.D., Sept., 1959. Training in all fields of basic microbiology, with research in microbial metabolism. Desires faculty position with teaching and research opportunities in a university or medical school. Address: A-409.

PHYSIOLOGIST-ENDOCRINOLOGIST: Ph.D., age 36. Training and background in endocrine, cellular, mammalian and zoological physiology. Presently assistant professor engaged in teaching and research in endocrinology and general physiology. Formerly research associate in biochemistry. Desires academic and/or research position. Address: A-410.

ANATOMIST: Age 34, married. Ph.D. Anatomy 1957. Publications. Teaching experience in Eastern medical

school. Desires teaching position with opportunity for research. Address: A-411.

INTERNIST: Age 35, married. Ten years training in internal medicine and hematology. Teaching experience and research in field of clinical hematology, B₁₂ metabolism, radioactive uptakes, experimental hematology, and enzyme studies. Desires teaching position with opportunity for research. Address: A-412.

SURGEON: Age 35, native of Bombay, India. In U.S. since 1952. F.C.P.S. (Bombay), F.R.C.S.E. (Edinburgh). Completed residency training in general surgery in U.S. and successfully taken Part I examination of American Board of Surgery. Desires full-time position in teaching and successfully taken Part I examination of American Board of Surgery. Desires full-time position in teaching and/or research in American medical school. Presently senior resident in surgery in Eastern hospital. Experience in plastic surgery as well as urology and anesthesiology. Address: A-413.

UROLOGIST: University trained, finished 1956. Seeking full-time academic post: teaching, research, and clinical work. Presently in private practice and part-time university teaching. Address: A-414.

GROSS ANATOMIST: D.S.D., Ph.D. Ten years teaching experience in medical school; previously taught in dental school. Clinical experience in plastic and oral surgery. Research interests and publications: homotransplantation of tissues. Desires academic position in medical or dental school with research facilities. Will consider research associateship with plastic surgery department. Address: A-415.

MICROBIOLOGIST: Ph.D. Seeking position on medical school faculty in Southeast or Southwest. Many years experience and supervision in clinical microbiology. Six years on medical school faculty. Qualified in parasitology, virology and public health. Address: A-416.

INTERNIST: Age 31, now completing third year of residency in internal medicine. Desires position as director of medical education in teaching hospital. Well trained in basic patho-physiology and have assisted director of medical education at current hospital. Particularly interested in setting up and conducting a new program. Address: A-417.

INDEX TO ADVERTISERS

Annual Reviews, Inc.....	xxxi	J. B. Lippincott Company.....	xix
Appleton-Century-Crofts, Inc.....	iii	McGraw-Hill Book Co., Inc.....	2d cover
Bausch & Lomb Optical Co.....	xiv & xxv	C. V. Mosby Company.....	v
Burroughs Wellcome & Co., Inc.....	xiii & xvii	Ortho Pharmaceutical Corp.....	x, xi & xii iv & 3d cover
Eaton Laboratories.....	viii	W. B. Saunders Co.....	1st cover & page i
Mead Johnson & Company.....	4th cover	Tampax Incorporated.....	ix
Lakeside Laboratories.....	xvi	Taylor Instrument Companies.....	xxi
Lea & Febiger.....	vii	Williams & Wilkins Co.....	xxiii



she can choose her own silver...

but she needs **your** help in planning her family

Delfen

VAGINAL CREAM
THE MODERN CHEMICAL SPERMICIDE

Preceptin

VAGINAL GEL
THE SPERMICIDAL GEL WITH BUILT-IN BARRIER

PRESCRIBED WITH CONFIDENCE FOR SIMPLE, EFFECTIVE CONTRACEPTION

00559

another
bothersome
phone call
about
loose stools?

specify **Lactum** a well tolerated formula...widely and satisfactorily used

Normal Stool Frequency with Lactum¹

Lactum was fed to 57 normal infants for 2 to 10 months. The investigators observed: "In no case was there any history of persistent diarrhea. In forty-eight infants, the usual number of stools was one to two daily; in only nine were there three, or occasionally four a day."

Low Incidence of Loose Stools in Hospital Study²

In a clinical study of 180 sick and 10 well infants fed Lactum, the investigator reported: "There was no diarrhea in any of the infants except in those patients whose diagnosis on admission was infectious diarrhea... we have been convinced that inclusion of adequate added carbohydrate in... [Lactum] during stress periods, such as diarrhea, is definitely advantageous."

to avoid baby's discomfort and mother's anxiety...specify

Incidence of Loose Stools Negligible ² 190 Hospitalized Infants		
Age	No. Cases	Loose Stools ¹
Birth	14	0
1 mo.	36	0
2 mo.	27	1
3 mo.	12	1
4 mo.	10	1
5 mo.	14	0
6 mo.	8	0
7 mo.	19	0
8 mo.	11	0
9 mo.	10	0
10 mo.	8	0
11 mo.	11	0
12 mo.	10	0
	190	3 (1.6%)

¹Exclusive of infants admitted with infectious diarrhea

²1. Frost, L. H., and Jackson, R. L., J. Pediatr. 39:585-592 (Nov.) 1951.

2. Henrickson, W. E.: GP 8: 51-56 (Oct.) 1953.

Lactum [®] liquid • "Instant" powder
Modified milk formula, Mead Johnson



Mead Johnson

Symbol of service in medicine

FP-2859M